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Perspective

Leadership in the AMEDD

Major General Kevin C. Kiley

Leadership encompasses many different roles and faces within the AMEDD. It is found at all levels of command from the Army Surgeon General to the squad leader in the medical platoon. Even within military treatment facilities, decisions made during the daily activities of a hospital ward or clinic can be as important as those made by the hospital commander. While the commander sets the environment and standards and often makes the final decision for a medical unit, and the staff physician is ultimately responsible for a patient's care, all personnel involved in the process are crucial and must demonstrate leadership at their level.

Leadership is at the core of Army values and must be taught to every soldier from the beginning of their training. These values teach each soldier to take responsibility for their actions and positively influence those around them. Loyalty, Duty, Respect, Selfless Service, Honor, Integrity, and Personal Courage are an integral part of each soldier's daily life and are not simply phrases posted on a wall. These values define good leaders and need to be upheld on a daily basis throughout all aspects of Army life. If the senior leadership of the AMEDD fails to instill these values in our officers, NCOs, and soldiers, then the AMEDD will fail to meet its mission.

This month's issue of the AMEDD Journal explores several different aspects of leadership found in our different corps. The AMEDD Journal has become an important forum for presenting many of the issues that Army leaders regularly encounter. The articles that highlight issues within the Army Nurse Corps and the Medical Service Corps will have a tremendous impact on leadership of the Army into the next decade.

• *Nursing Readiness: Active Duty vs Army Reserve.* This article details the application of a readiness assessment tool for new Army Nurse Corps officers attending the Officer Basic Course. Comparative results of Active Duty and Reserve Component nurses are outlined in the areas of clinical nursing competency, operational competency, survival skills and help to define future strategies for the training of nurses.

• *The Role of the Administrative MSC Officer.* This submission is an overview of the crucial role that administrative MSC officers will play in the changing health care industry as it relates to military health care and the future of the AMEDD.

In addition, this issue includes articles on:

• *Obstetrical Ultrasound Training: Survey of Military Residents' Experience.* The authors present a survey designed to assess the level of obstetrical ultrasound education in military residency training programs.

• *Differential Diagnosis: The Challenge of Chronic Fatigue.* This presentation, given to the Medical Society of London by The Surgeon General of the Australian Defence Force, outlines the broad spectrum of possible diagnoses in defining chronic fatigue syndromes.

• *The Roots of American Military Humanitarianism.* In this article, the beginnings of U.S. Army medical humanitarian missions are traced back to the Lewis and Clark expedition as they explored the western frontier.

• *Decision and Avoidance: Mobilization for Korea and Vietnam.* This is an in-depth review of the U.S. Army Medical Department's response to the Korean and Vietnam conflicts. It contrasts the rapid mobilization of medical assets and severe shortages prior to Korea with the planned increases during the Vietnam era that coincided with troop buildups in the theater of operations.

CORRECTION

In the April – June issue of the AMEDD Journal, Dr Harry Gilbert, DDS, co-author of the article *Large Non-Painful Exophytic Lesion of the Lower Lip* was incorrectly identified as "Mr Harry Gilbert, DDS." The entries should have read "Harry Gilbert, DDS." The Journal regrets any confusion this error may have caused.

Differential Diagnosis: The Challenge of Chronic Fatigue

MG John Pearn, RAAMC†

Introduction

The chronic fatigue syndrome (CFS) comprises one of the most challenging issues in contemporary medicine. The condition remains distressing for patients and perplexing to medical science. Clinicians face a management path which has no "gold standard" of investigational mileposts and are locked into a progression where the extremes of either under treatment or over-investigation may lead to iatrogenic disaster.

The themes of investigation, diagnosis, and management of patients with the CFS remain controversial. This condition joins in historical perspective a series of other diseases such as pink disease, post-traumatic stress disorder (by a variety of names), the Royal Free disease, Q Fever, Ross River disease, and chronic ciguatera – all of which have occupied windows of historical time in the 20th century during which their genesis remained an enigma. In some cases, they still do. New and puzzling diseases will undoubtedly arise in the future. Both patients and medical science are best served if the formal discipline of differential diagnosis is followed unswervingly under these circumstances or "new" diseases. The rigour of this discipline – the rank listing of formal possibilities after the clinical history and objective signs have been elicited – forms the pivot of best-practice contemporary medicine. An example of its power is no more dramatically illustrated by the example of a "new" enigmatic disease, chronic ciguatera, which "reappeared" in the 1950s. Ciguatoxins are some of the most potent biological substances known. Their neurotropic effects produce a protean array of symptoms which are distressing in the acute-phase syndrome and which are enervating throughout the often-prolonged progression of convalescence. It is now appreciated that such effects are due to sodium channel activation and subsequent dysfunction at the receptor sites on the cell surface of all excitable tissues.

Doctor A. Melvin Ramsay, the Honorary Consultant Physician in Infectious Diseases at the Royal Free Hospital in London, was at the clinical epicentre of the presentation of another new disease in July 1955. His approach to its diagnosis, in the best traditions of differential diagnosis, is an exemplar of the objective response to the appearance of a new or enigmatic disease; and especially to that type in which experience has not generated sufficient case familiarity to define syndrome barriers or to establish pathogenesis. Under such conditions, the correct diagnostic paradigm is to follow the discipline of differential diagnosis, an evolved phenomenon of the last 100 years of medicine. This article traces the evolution of the process of differential diagnosis, in the perspective of the enigma of chronic fatigue, which remains an unmet challenge today.

The diagnosis and management of the CFS remains one of the most challenging issues in contemporary medicine. Patients present with a pleomorphic constellation of clinical symptoms; and the attendant clinician needs to consider many possible diagnoses in order that appropriate investigations can be undertaken and management commenced with minimal delay.

Such an approach centres on the discipline of differential diagnosis, an ethos which is the pivot, either implicit or explicit, of all best-practice medicine. The differential diagnosis is formally defined as:

"A list of diseases, commensurate with the elicited history and the observed signs, arranged in ranked order of likelihood."

The rigour of formulating a differential diagnosis is the fulcrum on which all diagnosis in medicine depends. Its centrality in the diagnostic processes of medicine in the 21st century means that diseases will not be missed or misdiagnosed. Further, it means that only appropriate tests and investigations will be instituted – this latter theme with its connotations not only of reducing investigatory risks to patients, but also that unnecessary costs will not be incurred. In the case of the CFS, however, the discipline and process of differential diagnosis is of particular importance. Any compromise to such an approach leads to an open-ended chronology of tests and investigations which may go on for many months or even years. Such in itself may lead to the secondary accentuation of symptoms; and in the worst instance such leads to overtones of iatrogenic malady.

The physician whom this Lecture honours, Dr A. Melvin Ramsay, was the Honorary Consultant Physician in Infectious Diseases at the Royal Free Hospital in London. In 1955, Dr Ramsay was at the clinical epicentre of a strange and puzzling outbreak of disease, which paralyzed not only patients, but the hospital itself.[1,2] In July 1955, a resident doctor and a staff nurse were admitted as inpatients to the medical ward at the Royal Free with a puzzling constellation of symptoms and signs which had the clinical hallmarks of a viral disease with neurotropic features.[3] Many other staff members became ill; and by the time the epidemic had run its course, 292 members of the medical, nursing, and administrative staff were affected. As a safety measure, the Royal Free Hospital was closed for the ensuing 10 weeks.

The disease, called by some the "Royal Free Disease," was similar in its clinical pattern to outbreaks which had been encountered in health staff populations of other hospitals including the Los Angeles County General Hospital in 1934, The Middlesex Hospital in London in 1952, the Addington Hospital in Durban in South Africa, and at my own alumnus, the Hospital for Sick Children at Great Ormond Street, London, over a 6 month period from August 1970.[4-7]

Numerous other outbreaks of similar diseases have been noted in primary schools, high schools, training institutions, and in Army establishments.[8-10] Features of those epidemics included muscle weakness, pathological fatigability, and the subacute or chronic nature of convalescence experienced by those caught up by the illness. Controversy has surrounded the cause or causes of those epidemics. Although many have regarded the epidemics as manifestations of hysteria, Professor Peter Behan has pointed out that the fever, lymphadenopathy and miscellany of abnormal pathological tests "represented a body of circumstantial evidence that supported the hypothesis of an organically determined disease."[11-14] The controversy continues today.[15-17]

The CFS occurs in both endemic and epidemic form and is encountered by health practitioners everywhere. In the last half of the 20th century, further epidemics were reported from Iceland, New Zealand (Tapanui disease), Australia, and from the United States of America.[18-20] To enable clinical and research communication to move forward, the Center for Disease Control (USA) formulated an arbitrary but specific definition of what constitutes the CFS, synonymously termed the myeloencephalitis (ME) syndrome.[21] So defined it comprises:

"A chronic illness (exceeding) a timespan of 6 months or more with a focus of onset, in which the characteristic symptom is unremitting persistent fatigue made worse by exercise and unrelieved by rest; and occurs in the demonstrated absence of other diseases which classically cause chronic fatigue."[22]

Many syndromes and diseases have the symptom of chronic fatigue as the most distressing, unremitting complaint. It is the consideration of these other possible causes – their confirmation or exclusion – which constitutes the discipline of differential diagnosis. Syndromes which are "look alikes," or indeed identical syndromes, include post-viral states, chronic viraemias, neoplastic syndromes, neurological diseases, especially in the early substantial stages of neuromuscular disease, psychiatric disorders, and some forms of both organic and inorganic poisoning.[22] To mislabel any one of these as CFS or ME, or to leave a patient with CFS undiagnosed

as such, means that the discipline of differential diagnosis has failed. The formal approach of differential diagnosis is central to the clinical management of patients presenting with the symptoms of chronic fatigue.

The Example of Ciguatera

One striking example of the power of differential diagnosis relates to the discovery that intractable chronic fatigue is a feature of the post-exposure convalescence which follows the fish-poisoning disease, ciguatera.[23] In the 1950s in Brisbane, Australia, a patient (Mrs Denise Tronc, in the public record) presented to multiple doctors with the symptoms (it is now appreciated) of severe chronic fatigue.[24] She had complained of a strange and puzzling acute-illness onset in which she described a reversal of thermal sensation – hot water imparting a chilling sensation and cold objects having a burning quality. She was diagnosed as suffering from influenza. It was only after the publication of the details of similar cases, one of which was fatal, by the Queensland forensic pathologist, Dr John Tonge, that it was appreciated that the disease was ciguatera.[23] Mrs Tronc established a patient support group to help the many sufferers of the enigmatic syndrome highlighted by intractable chronic fatigue which was, in reality, due to ciguatera intoxication. In that era before the Internet, that patient-family-support group was pioneering in its provision of information, counselling, and self-help support for many victims, as it transpired, who had been misdiagnosed; or who had remained in "diagnostic limbo" because it was not appreciated that ciguatera should be included in the differential diagnosis of newly presenting cases.[24]

Ciguatera is a clinical intoxication caused by the ingestion of ciguatoxic fish.[25-28] Human victims are the end link in a food chain cascade.[29] The primary toxins are manufactured in the benthic dinoflagellate *Gambierdiscus toxicus*, and are concentrated successively in the flesh and viscera of small piscine herbivores, small carnivorous fish and ultimately in larger fish, many species of which are prized gourmet species.[25,29] "At risk" fish, include some species of mackerel (*Scomberomorus* sp) and barracuda (*Sphyraena* sp) and many of the tropical reef species such as Coral Trout *(Plectropomus* sp); and in some parts of the tropical and subtropical world, in the flesh and viscera of Moray eels (*Lycodontis* sp).[25,27,30] The disease is not uncommon in many littoral populations of the tropical and subtropical countries of the world.[31] In some island nations in the Caribbean and in the Pacific where the principal source of protein is fish, the annual incidence of intoxication may approach 10% of the population.[32]

Extensive international commerce in frozen fish, and especially trade in gourmet species, means that victims of this dramatic intoxication may now be encountered in all countries.[33] An estimated 10,000 to 50,000 victims suffer the disease annually.[34] Cases have been reported in the last decade from the U.S. (Hawaii and from Rhode Island), Madagascar, Hong Kong, Europe, and extensively from the South Pacific.[25,26,31,33,35-39] Ciguatera is thus a global health problem from the perspective of preventive medicine and an acute challenge for the clinician treating individual cases.[27]

Ciguatoxins are potent heat-stable, nonprotein, lipophilic sodium channel activator toxins that bind quasi-irreversibly to the voltage-sensitive sodium channel at site 5.[40] The molecular targets are found on all membranes of excitable tissues but manifest varying tissue-specific affinity. The receptor site overlaps the receptor site for brevitoxin, another food chain paralytic toxin.[41] Both Pacific and Caribbean ciguatoxins have as their basic structure a unique molecular chain of 14-joined ether rings ($c_{62}H_{92}O_{19}$).[30] Nine of these transfused rings form a ladder that is common to all ciguatoxins.[39] The toxins are tasteless and odourless and are relatively heat stable to the temperatures usually employed in cooking. Both Pacific ciguatoxins (P-CTX-1) and Caribbean ciguatoxins (C-CTX-1) are stable for at least 6 months at commercial freezing temperatures.[40]

Clinical evidence suggests that the toxin binds to sodium channel receptor sites of both somatic and autonomic nerves. The chronicity of symptoms (months or years in some victims) and the exquisite sensitivity of convalescent victims accidentally subjected to rechallenge suggests that the sodium channel receptors are inactivated permanently; and that convalescence from severe intoxication may depend on the generation of new receptors.[26,39,42-46]

The chronic effects of ciguatera have been recognized in Pacific littoral communities for centuries. The intractable

fatigue, often with persistent headache experienced by some 3-20% of severely intoxicated victims, is perplexing to patients and frustrating to doctors.[23-25] The persistent fatigability and weaknesses are often accompanied by depression.[42,43] It is not known whether the depression – which in some victims can be a significant feature of the prostrating fatigability of chronic ciguatera – whether such is due primarily to residual toxic effects, or is secondary to the organic debilitation which may follow the primary episode of poisoning. In patients presenting with the constellation of symptoms and signs which comprise the CFS, it is always important to include the possibility of chronic ciguatera in the differential diagnosis.[43,47] In rare cases, ciguatera may cause peripheral neuropathy and polymyositis.[48-50]

The insomnia of the acute ciguatera syndrome may gradually change into the hypersomnolence that is a common feature of chronic ciguatera, and is cognate to that experienced by victims of CFS. In cases of CFS in which ciguatera can confidently be established as the cause, there is no need – indeed it is counterproductive – to embark on open-ended extensive investigations and a continuum of pathological tests. A milieu of optimism, with confidence about the success of long-term convalescence, is the best approach during long-term clinical surveillance of such victims over ensuing months. Currently there is no clinical test for ciguatera, although bioassays are available in various research centres.[30] The diagnosis is essentially a clinical one, made particularly in the context of a detailed history of the type of fish species ingested, the rate of onset of symptoms, and a knowledge of the characteristic neurological features.

Hyperosmotic mannitol infusions may reduce Schwann cell edema, which is a feature of acute ciguatera.[39,44,45] Although not yet tested by double-blind trials, most case series report that more than 60% of victims have their symptoms reversed by mannitol infusion provided that this is administered within 48 hours of the onset of symptoms.[26,27,31,39,44] No other therapy, other than nonspecific supportive management, has been shown to be of benefit. The neurological symptoms, however chronic, always resolve gradually. Some 5% of severely intoxicated victims complain of residual symptoms, particularly overwhelming chronic fatigue, for many months or even years after the acute episode.

The pleomorphic nature of ciguatera and the subjectivity of many of its symptoms – in the absence of any definitive laboratory diagnosis for clinical cases – make this condition one of the most challenging in clinical medicine. Although relatively few cases of the CFS are due to ciguatera, the latter's inclusion in the differential diagnosis of newly-presenting cases of the former will help affected individuals enormously.

Differential Diagnosis

Seen in the broad perspective of the history of medicine, the formal concept of differential diagnosis is relatively recent. The discipline of differential diagnosis was a singular phenomenon of the first decade of the 20th century and grew out of the Oslerian re-envigoration of the bedside skills – both in history taking and in clinical observation – of the attendant physician. I believe that differential diagnosis was the consequence of two developments in late 19th century medicine. These were firstly the development of nosology, which saw its greatest advances in the second half of the 19th century. Such new discoveries in medical science were so great as to constitute a qualitatively distinct era of the understanding of medical thought. Secondly, the emergence of laboratory technology, particularly in the form of microbiology, biochemistry, and radiology, provided also a quantum leap in extending the skill and diagnostic art of the clinician beyond that which had hitherto been available, since Hippocratic times, by the skill of the clinician's own hands.

Nosology is that branch of medicine that has to do with the classification of disease. It developed particularly from the time and influence of Thomas Sydenham (1624-1689), the "English Hippocrates."[51,52] Disease taxonomy leads to greater specificity in the delineation of what might be the fundamental cause of a patient's symptoms. Following particularly the leads of neurological science in the second half of the 19th century, it became possible to diagnose distinct and specific diseases which otherwise had in common, identical symptoms and signs. What nosology is to pathology and the broader perspective of medicine, differential diagnosis is to the individual patient.

Differential diagnosis formally came of age in 1913, with the publication of the first edition of Herbert French's "An Index of Differential Diagnosis of Main

Symptoms."[53] Although there had existed, since medieval times, indices of symptoms, French's "Differential Diagnosis" was unique in the history of medical literature. In its preface, the author noted:

> "The guiding principle throughout has been to suppose that a particular symptom attracts special notice in a given case, and that the diagnosis has to be established by differentiating between the various diseases to which the symptoms may be due."[54]

In the clinical approach to any individual patient, the list of diseases that comprises the differential diagnosis has, by definition, to be reduced by the investigative power of special tests and investigations not available to the senses of the doctor. Differential diagnosis is, thus, a way station on the path to a definitive diagnosis in the individual patient under consideration. The ascertainment of symptoms and the detailed recording of signs (described by Hippocrates, circa 400 B.C.) had reached a significant peak of sophistication in the second century A.D., in Galen's time. (Galen: 129 – c.199 A.D.)[55,53] Until Sydenham's time, however, diagnosis was entirely of the:

Specific symptom → disease nexus

rather than the:

Specific symptom → differential diagnosis → tests and laboratory investigations → definitive diagnosis chain

I believe that one can identify five nodal points along the historical pathway to the paradigm of differential diagnosis today. These comprise:

- *Symptom-Treatment Nexus.* The direct link between a symptom and its treatment – without intervening differential diagnosis or even diagnosis – well developed by 1500 B.C. in Egyptian medicine and well recorded in several Egyptian medical papyri.[56] This approach to treatment remains the common lay practice today (for example "take an aspirin for the headache.") The patient's safety and the efficacy of "medical" treatment can be partly protected by polypharmacy of those practicing this type of health; but such, of course, brings its own risks.

- *Empiric Diagnosis.* A second paradigm was that reached by evolution of the "craft" of medicine in which great specificity was achieved in the interpretation of symptoms; and progressive skill evolved in the observation of clinical signs. One sees a parallelism in many of the different emergent systems of medicine including those of ancient Greece, Rome (Galenical, derivative from Greece but with the added knowledge of detailed anatomy), Indian medicine, particularly that of Sanskrit derivation, and Chinese medicine, particularly with its emphasis on pulse-taking and pulse diagnosis.[5,7,53,57-62]

- *The Rise of Nosology.* The finer and finer delineation of separate diseases has been a progressive phenomenon of all emergent systems of medicine. This trend saw its "great leap forward" at the time of Arabic medicine emergent from the western Dark Ages.[63,64] Modern nosology dates essentially from the teachings of Sydenham, and saw its development made possible by advances in scientific methods.[65] Nosology saw some of its greatest debates in the last decades of the 20th century, in the "Lumpers" versus "Splitters" controversies, highlighted by the exact detailed approach to genetic diagnosis developed particularly by Professor Victor McKusick at Johns Hopkins Hospital, Baltimore. That debate was won by the "Splitters" as the progression of medical history had inexorably predicted.

- *The Rise of Laboratory Science and Technology.* The second half of the 19th century saw the culmination of the detailed work of Bichat, Virchow, Pasteur, and the discoveries of German biochemists that provided the intellectual tools for the "next step" beyond bedside medicine. Such advanced exponentially the diagnostic options of the bedside clinician. This progress saw its apogee in the discovery of X-rays by Roentgen in 1895.[66,67]

- *Differential Diagnosis.* An approach undoubtedly practiced informally by clinicians since Hippocratic (400 B.C.) times, but given formal status only in the last decade of the 19th century, in Osler's writings. In the ensuing two decades, French introduced the formal term "differential diagnosis."[54] Differential diagnosis is but one step along the pathway towards a definitive diagnosis. Indeed, from the patient's point of view, the longer the doctor's list of possibilities, the less confidence patients have in their doctors, however honest the doctor's approach might be. In other words, there exists a tension between patients who

want a blindingly confident, instant diagnosis, even before history-taking is complete; and between honest doctors who wish to be scrupulously exact and professionally ethical, who acknowledge that the realities of modern nosology must rely on confirmatory investigations for all but the most trivial of conditions.

This is not to deny that the "Law of Parsimony" in differential diagnosis is very important – "in many cases, a single focal irritation will induce widespread symptoms of great diversity."[68] It must be remembered also, that treatment itself may be used as a diagnostic test, the so-called "diagnosis ex juvantibus."[68] The way in which symptoms react to treatment often leads to a definitive diagnosis.

Some diagnoses are reached following the construction of a formal differential diagnosis, by the exclusion of all but one of the diseases in the differential diagnostic list. This "negative" approach to differential diagnosis is completely legitimate, but is never as satisfying as diagnosis by positive confirmation using a "gold standard" test. Such is the current difficult status of the CFS, which has elements of both positive definition and negative exclusion.[21]

Conclusion

The history of medicine is replete with the appearance of "new" examples of diseases which manifest with no pathognomonic signs; and which, at least for a time, are not subject to any "gold standard" confirmatory tests. The fibromyalgia syndrome was one such.[69] Thus it is also with CFS, called by a leader-writer (Editor in *The Lancet* in 1956) "a new clinical entity."[70] Ciguatera and acquired immunodeficiency syndrome are more recent examples. Many such "new" diseases are, at their earliest stages of recognition, believed to be nonorganic syndromes. Fibromyalgia syndrome responds for a short time (up to 3 months) to tricyclic antidepressants but its genesis remains unknown.[71] The puzzling features of chronic ciguatera were originally regarded as nonorganic; and although no laboratory tests are yet available to confirm its diagnosis in individual patients, it is now incontrovertible that its symptoms are due to ion channel inactivation.

Doctor A. Melvin Ramsay himself, in his pursuit of the pathogenesis of the CFS, followed the paradigm of developing a formal differential diagnosis, and pursuing the appropriate lab tests and investigations that lead to a definitive diagnosis.[72] The Memorial Lecture, which bears his name, is a most fitting tribute to one who followed both the path of humility and of best-practice medicine in his pursuit of answers to clinical challenges that have even greater relevance today.

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The Role of the Administrative MSC Officer

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Introduction

The Army Medical Department (AMEDD) is poised to make the greatest advancements in its history. The administrative Medical Service Corps (MSC) officers will play an integral role within the AMEDD during the implementation and execution of these advancements. The role of the MSC is to "integrate and synchronize resources...understand health care policy...and implement business practices that ensure we efficiently and effectively deliver health care services..."[1] This role is crucial to the AMEDD, for it enables our clinical colleagues to focus on the delivery of the highest quality of care, the management of care processes, and further research into prevention and the health protection of our soldiers, families, and retirees at home and abroad.

There are three major objectives of this article. *First*, provide a background of the business practices and environment that the U.S. health care industry is operating in and relate this to the AMEDD. *Second*, offer some insight into the historical context and the contractual and financial structure that the AMEDD must struggle with. *Third*, provide some examples of thought provoking business practices for discussion. This knowledge is critical for the MSC officer to influence the internal operations of our medical treatment facilities (MTFs) and at the major command staff-levels. The AMEDD must undergo a true culture shift from struggling to maintain the direct care system with dwindling resources to excelling with what we have.

The intent is to synthesize this information within the framework of the MSC role, as defined by the MSC Corps Chief. This generates three crucial concepts for the MSC. First, the MSC officer must be knowledgeable about the data systems and the data elements populating those systems. Second, the MSC officer must assume responsibility for the accuracy of the data within those systems. Third, the MSC officer must become better trained at conducting analysis (that is relevant according to the contractual language) in order to provide the MTF leaders with the best possible facts for business decisions. The MSC officer can obtain the necessary skills and knowledge from many venues. Clearly, civilian education and training opportunities, affiliation with professional organizations, and professional development through reading the health care literature head the list. But, these are by no means all inclusive. Another powerful educational and developmental tool is the mentoring provided by experienced officers to junior officers. In this time of unprecedented change, the MSC senior leaders must ensure that the necessary skills are produced and passed-on to the next generation of officers.

Literature Review

The health care industry is currently facing the difficult challenges posed by the competitive nature of the free market with the added feature of having the government serve as the single largest payer. The health care industry, responding to the perceived failure of the fee-for-service and prospective payment health care-financing systems,

has aggressively undergone implementation of managed care in order to reduce the rate of cost growth.[2] The general theory behind managed care is to link delivery of care with the financing of the care. Although providing quality and accessible care is important, the fundamental function of managed care is to control costs through the provision of necessary services rather than desired services.[3]

The threat of competition from managed care has forced many organizations to become more efficient. Despite brutal competition caused by the growth of managed care plans, hospitals in states with the highest percentages of managed care penetration were more likely to have significantly better financial health and cash positions than hospitals in states with the lowest managed care penetration rates.[4] This was unexpected because the reimbursement rates in areas of high-managed care penetration were significantly lower.

The shift to managed care and the need to control costs led hospitals to more carefully review their internal operations. Sopariwala describes the serious threat to the long-term financial health of hospitals posed by excess capacity.[5] In this competitive environment, excess capacity that is not reallocated into revenue producing activities will increase the financial strain on those institutions. While the initial risk of carrying excess capacity may seem small, managed care organizations (MCOs) and other payers will likely continue to reduce reimbursements and competitors will work to lower their costs.

Kirby and Sebastian predict that in areas of high managed care penetration, MCOs will no longer gain market share through cost cutting alone.[6] There are concerns over the actual implementation of managed care by some elements of the health care industry that have placed an over-riding emphasis on cost containment rather than on health status improvement and quality of care. However, organizations that focus on the well-being of their beneficiary populations, in addition to efficiencies and cost containment, will be most successful.[6-8]

The escalation in the percentage of the Gross Domestic Product (GDP) consumed by health care stabilized in the mid-1990s. Of the $8.5 trillion U.S. GDP for 1998, health care expenditures represented 13.5% or $1.149 trillion. This percentage has been stable since 1994, despite continued growth in enrollment in managed care plans and reductions in the percentage of health care expenditures going to U.S. hospitals.[9] Recent research suggests that pharmacy cost growth, rising health premiums demanded by managed care plans, widespread provider dissatisfaction, medical consumer protection legislation, and failed efficiencies in many managed care delivery structures are the major reasons for the failure of managed care to reduce the percentage of U.S. GDP spent on health care.[10]

Clearly, the U.S. health care industry has not yet figured out how to effectively implement managed care in a manner that is best for the patients. The influence of the health insurance industry on the private health care market may be more powerful than ever. We can infer that the over-riding emphasis on cost containment by the private health care sector is driven, to some extent, by the constriction of monetary reimbursement. It is useful to observe that most private health care organizations are suffering from a constriction of income. However, some have apparently grown stronger, while others become weaker if they fail to adapt to the challenging environment. Perhaps the most important lessons from the literature are that those organizations which identify and reallocate excess capacity into new "revenue-generating" activities (indicative of additional patient-care) are the most successful.

The AMEDD also faces many difficult challenges that are exacerbated by the brutal pressures of shrinking real dollars. However, the AMEDD is challenged to meet the health care delivery mission with fewer real dollars and the additional confounding variables of military medical personnel losses, increased deployment of military medical personnel, a relatively healthy yet transient population, and a misalignment of financial incentives with the managed care contractual language. The AMEDD must meet these challenges with internal talent rather than waiting for senior Army or defense leaders and the Congress to solve them.

The AMEDD began its sojourn into managed care during October 1991 with the initial start-up of the Gateway To Care (GTC) program designed by COL Doug Braendel. Under GTC, the individual MTFs were held accountable for the Civilian Health and Medical Program

of the Uniformed Services (CHAMPUS) expenditures within their catchment areas. This changed the funding mechanisms and incentives for AMEDD MTFs by allowing MTFs to obtain additional funds if they could present a business case analysis that resulted in the recapture of CHAMPUS workload. This change in the financial incentives finally allowed managed care actions, such as health promotion programs (screening and cessation), prevention programs, and ambulatory care, in addition to acute, episodic inpatient care, to take hold. These changes greatly reduced perverse incentives for unnecessary or wasteful visits, admissions, excessive lengths of stay, or simply referring care out to the civilian sector through the CHAMPUS. The shift to capitation budgeting did not reduce the importance for measuring workload. In fact, it is the only way to measure internal activities to find more efficient means of production. Workload is used to assess internal processes, but not to generate revenue. The Military Health System (MHS) began implementation of its system-wide managed care program (TRICARE) during fiscal year 1994, ending the AMEDD's GTC program.[11]

Unfortunately, with the implementation of the TRICARE program, there has been a return to some of the perverse incentives of the past. Once again, the MTF has been removed from accountability for CHAMPUS-eligible care purchased within the civilian sector (and the active duty supplemental care for regions using the older managed care support contract [MCSC] 1.X bid-price adjustment [BPA] resource methodology) and from any adverse health care operational or business decisions. These perverse arrangements result from having the purchased care costs and the year-of-execution (YOE) and/or BPA payments for CHAMPUS-eligible workload shortfalls paid centrally by the TRICARE Management Activity (TMA) and not by the MTFs.

From a pragmatic standpoint, the AMEDD is a very wealthy health care organization. With an annual operating budget of around $6.6 billion (which includes military labor), it is a large and complex organization. To provide some perspective, about 80% of this annual funding goes toward health care delivery within AMEDD MTFs around the world or for the care purchased via the different regional MCSCs. This leaves about $1.3 billion for funding readiness-related missions, AMEDD infrastructure (the AMEDD Center and School, the U.S. Army Dental Command, the Center for Health Promotion and Preventive Medicine, the Veterinary Command, the Medical Research and Materiel Command) and a myriad of other critical health-related organizations which support the AMEDD missions. Logically, the focus for improving the efficiency and effectiveness of the AMEDD should start with a review of the biggest resource consumer.

The direct care provided at the MTFs and the care purchased through the MCSCs, consume the largest amount of resources. These resources are expended primarily on three major categories of costs, which when combined, make up 82% of the Army's Defense Health Program (DHP) budget: In-house care (31% of total obligation authority (TOA); Purchased care (25% of DHP TOA); and Military Pay (26% of DHP TOA) (conversation with Dr D. Ardner, LTC, MS, 8 March 2001). The largest health care expenditure for the AMEDD is spent on health care delivery "in-house" by the MTFs as a direct care system cost. The next largest is for military pay assigned within the AMEDD MTFs. Some mistake military personnel as "free" to the MTF. However, this large expenditure is reimbursable to the U.S. Army for all medical personnel assigned to TDA positions. The third major category is the smallest of the three major expenditures. However, this money – spent on purchased care from the MCSCs – is growing faster than the overall rate of inflation budgeted into the AMEDD's annual program. As a result, this has created a drain on the financial resources available to the AMEDD, leading directly to a reduction in real buying power.

A greater appreciation of the problem can be gained by exploring the major subcomponents of the purchased care expenditures. First, the largest single portion of the purchased care bill is the cost of care for eligible beneficiaries paid by the MCSCs. These are payments for health care services rendered in the civilian sector. Next, the MCSCs are awarded contract administration expenses and profits that are paid centrally by the TMA. Third, the MCSCs using the older version 1.X contracts are awarded money in the YOE for CHAMPUS-eligible visits that will not take place within the MTFs during the contract year. This is for the difference between the CHAMPUS-eligible workload performed during the data collection period (DCP) and the annual best and final offer (BAFO)

CHAMPUS-eligible workload target. Fourth, upon completion of the contract year, actual CHAMPUS-eligible workload for each MTF is compared against the BAFO for CHAMPUS-eligible workload.

The difference between the DCP workload levels and the actual workload is called the O-Factor adjustment for the BPA and is usually paid 18 months after the conclusion of each contract year. The other significant factor in calculating the BPA (perhaps most important) is the actual cost of purchased health care. This second factor becomes important because even though a MTF may generate higher workload (recapturing the wrong workload or churning), the costs for delivering care may rise, hence cost to the contractor goes up, and the Government and MCS contractor would share in the losses. Conversely, if health care costs went down due to a higher MTF workload (recapturing the right workload and not churning), the Government and MCS contractor would share in the savings. These subtle differences are important for the MSC officer to understand because of the financial implications each business decision has, based on the MCSC language, in order to best advise the MTF leaders.

Discussion

The MHS must reduce beneficiary moral hazard, provide high quality care, improve consumer satisfaction, expand primary care, and reduce costs. Although challenging, this is quite similar to the environment faced by civilian MCOs.[12] Clearly, TRICARE-for-Life and other recent legislative proposals such as the reduction of co-payments, elimination of enrollment fees, and lowering of catastrophic caps, add further confusion to an already complicated environment. The new "lower cost" TRICARE will likely increase moral hazard and costs, but should improve customer satisfaction and access to primary care for eligible beneficiaries.

There are many missions that the AMEDD must master in order to be highly successful. All participants on the AMEDD team need to perform their particular set(s) of tasks for the team to be successful. The MSC officers' role includes three crucial mission elements that they must perform very well in order for the AMEDD to be successful. These crucial mission elements are to integrate and synchronize resources; to gain an understanding of health care policy and the implications on the AMEDD; and to implement business practices that maximize the efficiency and effectiveness of the delivery of health care services. This is the essence of health care delivery dominance.

This role demonstrates one overarching principle, that the MSC officer supports the clinicians. This fluid and challenging environment requires talented and educated leaders capable of adapting to the new environmental conditions. The MSC officer most crucial to facilitating the accomplishment of this role is the MTF Deputy Commander for Administration (DCA). Clearly, Rubenstein's work on the role perceptions of Army MSC personnel in DCA positions indicates that they must be fully aware of the external environment and be able to rapidly synthesize the impacts on the facility.[13] Additionally, the individuals in DCA positions continue to indicate a desire to improve their entrepreneurial skill set and serve as an "educator" within the MTF.

Integrate and Synchronize Resources

The MSC officers must fully appreciate the importance and complexity associated with this mission element. We are charged with the integration and synchronization of over $5 billion annually. Perhaps it is useful to think about this from a private health care business perspective. In a private MCO, excess capacity (wasted resources) directly impacts the bottom line in a negative manner. The goal in a capitated environment, where additional work does not translate into additional revenue, is to insure that every dollar (cost) is utilized in the most efficient and effective manner possible. In other words, all resources must be utilized to their maximum extent possible.

If a MCO has 11 primary care providers, each with a daily template of 21 patients, but who are only seeing 15 patients each per workday, this would create additional expenses of about $600,000 (four excess providers at $150,000 each). This excess capacity is a direct expense against fixed revenues and therefore has the same effect as an operating loss.

The entire concept of workload and productivity is controversial and often misunderstood. This misunder-

standing is compounded by poor analytical skills. In a hypothetical CONUS-based family practice clinic, shown in Table 1, the overall number of patients seen per day appears to be a little low, but not significantly. The AMEDD Staffing Assessment Model (ASAM) suggests a productivity standard of 20.15 visits per family practice (FP) provider per available day. This is similar to FP productivity (19.28) from civilian MCOs, modified for the military unique issues of the AMEDD.[14] The providers in our hypothetical clinic are lower than the ASAM standard, but this is often explained away as "poor data," "military related duties," or "we are doing a better job of managing care now...workload does not matter." Our providers in Figure 1 are seeing about 14.7 visits each per available workday (assuming 16 available clinic days per month).

Annual Total Visits	Annual Avail Prov FTE	Annual Visits/FTE	Monthly Visits/FTE	Daily Visits/FTE
29,075	10.3 FTE	2,822/FTE	235 FTE	14.7/FTE

Table 1.

However, the ASAM assumes telephone consults as part of the workload. The civilian literature does not appear to count telephone consults. Perhaps the reason is that telephone consults offer such a low relative value unit, it is not cost-effective to bill for the low reimbursement rate generated by the telephone consult. Therefore, we have modified the data in Table 2 to reflect the removal of the telephone consults in order to gain a clearer picture of our internal operations within this clinic.

Annual Total Visits	Annual Avail Prov FTE	Annual Visits/FTE	Monthly Visits/FTE	Daily Visits/FTE
23,076	10.3 FTE	2,240/FTE	187/FTE	11.7/FTE

Table 2.

Now, many astute MSC officers will note that overall productivity (with or without telephone consults) is not the end of the analysis. The contractual language in MCSC 1.X contracts further separates workload into three other major categories. Active duty (AD) workload is critical, but does not count in the BPA calculations. Therefore, it would be important from an analytic standpoint to further explore the overall workload from Table 2, by identifying the active duty dependent (ADD) and nonactive duty dependent (NADD) visits. A fourth category, telephone consults, is listed for reference. Table 3 displays the FY00 data for this clinic, by major category.

AD Visits	ADD Visits	NADD Visits	T-CONS
4,089	17,733	1,254	5,999

Table 3.

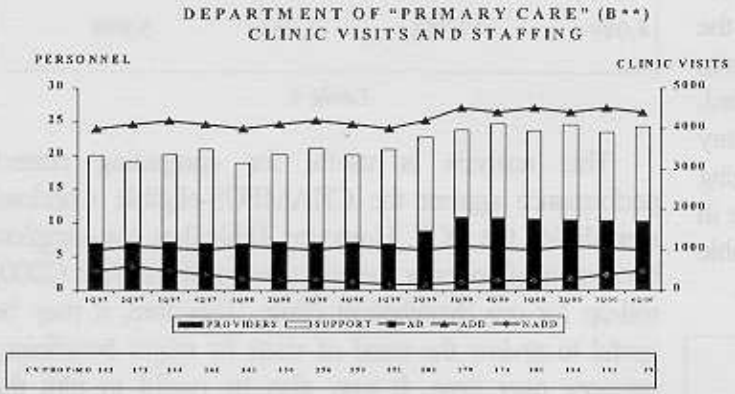
This analysis is useful for comparing current performance against the CHAMPUS-eligible workload seen during the DCP. However, Table 3 is not complete because it offers only the most recent fiscal year (2000) roll-up for our hypothetical clinic. Therefore, it may be useful to review the trend of visits by major beneficiary category over time. It may also be useful to plot the available provider (physician, nurse practitioner, physician assistant, etc) full time equivalents (FTEs) (the Medical Expense Performance Reporting System (MEPRS) personnel categories one and two) and support staff (registered nurse para-professional, and medical/ appointment clerks) FTEs (MEPRS personnel categories three through five) working in our hypothetical clinic during this same time frame (See Figure 1).

The data displayed show that mid-way through FY99, additional providers were added to the clinic workforce. There appears to be a rise in the overall number of ADD visits seen during the final six quarters and also a rise in the NADD visits back to the original level in FY97.

Although the number of primary care visits seen per provider per month has fallen off over the 16 quarters, this is often explained away because "we are managing care now," "we perform better wellness education now," or "we are no longer churning patients." Nevertheless, the argument can be made that since the total CHAMPUS-eligible workload increased, this was a wise investment.

However, we must still investigate further because once again, this is not the complete picture, for the contractual language further demands that we review the data for any resource-sharing arrangements. Under the MCSC 1.X contracts, workload generated in resource-sharing arrangements is generally credited to the MCSC,

so these visits must be removed. Figure 2 offers a more complete picture of the actual changes in the operations of our hypothetical family practice clinic over time. On the one hand, CHAMPUS-eligible workload did go up. But who performed the work?



Notes: Data are displayed by Fiscal Year Quarter
CV/PROV/MO – clinic visits (no telephone consults) per available provider per month

Figure 1.

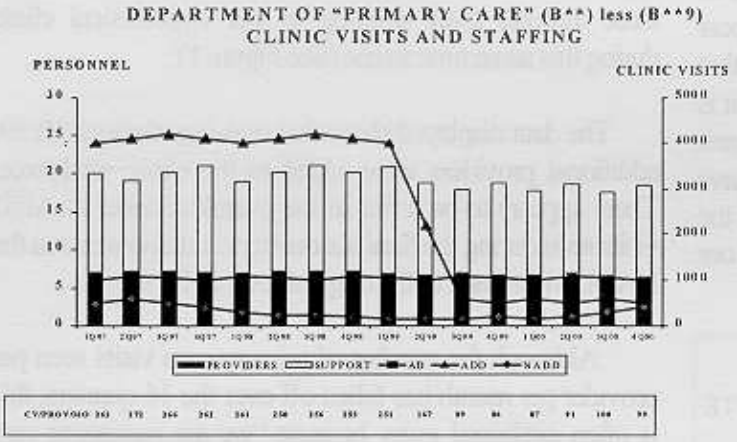


Figure 2.

Once the resource-sharing providers (about four FTEs) and their workload are stripped out of the clinic totals, the analysis suggests that the military providers simply shifted the existing workload to the resource-sharing providers. Montgomery would consider this an example of a bad resource-sharing arrangement and highlights the importance of good analytical skills, a sound understanding of the data systems and elements of data, an understanding of the contractual language, and the role that management must play in the "business" of health care delivery.[15] Unfortunately, our hypothetical MTF leadership team would not suffer any reductions in budget or military staffing for the suboptimal performance of their family practice clinic because of the (previous) lack of accountability.

However, this may be changing. According to Holt, the balanced score card (BSC) will serve as the centerpiece for the AMEDD's new strategic management system.[16] The AMEDD leadership can now focus on unified goals for the best employment of our precious resources to provide the highest quality of health care - and measure the progress with critical metrics. The major goal of the BSC is to integrate strategic planning, measurement, analysis, and performance reporting into a single system that focuses MTF objectives towards the larger strategic vision and objectives of The Surgeon General (TSG). A major component of the BSC is to meet customer and stakeholder expectations. Major stakeholders could include TSG, the U.S. Army, Congress, Health Affairs, and many others. Through the implementation of a BSC, examples such as this would be identified and corrected by the MTF staff, not by the higher headquarters.

Our example highlights the three crucial concepts for the MSC. First, the MSC officer must be knowledgeable about the data systems and the data elements populating those systems. Second, the MSC officer must assume responsibility for the accuracy of the data within those systems. Third, the MSC officer must become better trained at conducting analysis (that is relevant according to the contractual language) in order to provide the MTF leaders with the best possible facts for business decisions.

Understanding Health Care Policy and its Implications

It is obvious that data are important to those who influence the AMEDD the most. The TMA uses our data to make decisions concerning funding levels and the

generation of metrics by which they evaluate our performance. The MCSC organizations use our data when calculating requests for equitable adjustments and BPAs. Unfortunately, when decision-makers are forced to base decisions on inaccurate data and poor analysis, they may be severely limited in achieving their vision.

To help demonstrate some perspective on health policy and the implications on the AMEDD, we will provide two examples based on our hypothetical FP clinic. First, there are many AMEDD leaders trying to do the right thing. In the process of this quest, they gather information before making a decision. If there was a deployment of one or two providers from our FP clinic during FY99, and the MTF leadership team makes a decision to accomplish increased access despite the loss of two providers for 6 months, they may conclude that a resource sharing arrangement is the best alternative. It can be "turned-on" relatively quickly and there is no immediate cost to them out of their YOE operating budget. Additionally, with a subsequent policy decision to "see one more patient per provider per day," the MTF leadership team may conclude that the continuation of the resource-sharing arrangement is the best solution.

However, if this were true, their data do not reflect the deployment. Clearly, the MTF leadership team decided to continue the resource-sharing arrangement after the return of the two military providers. This hypothetical management decision is fairly costly to the AMEDD. In fact, the cost for the overall "increase" in access can be quantified. Let us assume that FY97 was the DCP and use the hypothetical figures of $84 of variable costs per ADD visit and $67 of variable costs per NADD visit. There were about 14,200 fewer ADD visits in FY00 performed by the "government" versus the DCP (see Figure 2) times $84, plus about 1,200 fewer NADD visits times $67. During FY00, the additional cost to the AMEDD was approximately $1.20 million in BPA costs against the government for the reduction in MTF CHAMPUS-eligible workload. We want to emphasize that the resource-sharing visits, although they undeniably added some limited access, do not count towards the government workload. So while the "total" visits for ADD and NADD did increase (see Figure 1), by a little over 18,000 – resulting in a net increase in access of about 2,000 CHAMPUS-eligible visits – the total system cost of this arrangement was a staggering $600 ($1.2 million for 2,000 additional visits) per incremental visit after the implementation of the resource-sharing arrangement.

This first example of policy and its implications on the AMEDD reflects all three of the critical data accuracy and data analysis tasks of MSC officers. The mission for improving data and providing accurate analysis for good business decisions falls squarely upon the MTF DCA. This is an implied task because of the close ties between DCA and the divisions most closely aligned with data and data analysis issues (managed care, resource management, logistics, information management, patient administration, and clinical support). Accurate data are critical to the success of the AMEDD. Not only does accurate data, and data analysis, provide the MTF leadership teams with sufficient facts to make better decisions, it also helps portray our unfinanced requirements to the Army, TMA, and Congress. The MSC team must excel at supporting the clinicians by assisting in the identification and gathering of relevant and accurate information. How can our clinician colleagues make informed managed care decisions without the data gathered, synthesized, analyzed, and clearly presented using our multiple health management information system (HMIS)?

The second health policy example we provide for discussion is also related to our hypothetical FP clinic. There has been much good work to encourage TRICARE Prime enrollment. Perhaps many MTFs worked hard to encourage enrollment by facilitating more appointments to Prime enrollees. In fact, the TMA developed a very powerful metric for measuring the access for TRICARE Prime enrollees at each MTF.

There are three rules for the development and implementation of performance measures. First, make sure that the measure affects behavior, and consequently, performance. Second, managers must be able to understand the measures, have the ability to impact the measures, understand what the emphasis from higher echelons is, and have an awareness of what the competing and counterbalancing measures are. Third, a well-defined measure will produce multiple positive effects – and no perverse effects.

The "TRICARE Prime Access" metric violates the second and third rule of building performance measures.

First, there has been little discussion about the competing and counterbalancing measures. On the one hand, we can make sure that space is available for Prime enrollees by holding excess capacity in "reserve" for all types of appointments. A competing measure is the TMA template analysis tool designed to review Composite Health Care System data on template management. A counterbalancing measure may be the BPA language of the MCSCs. Second, it can be argued that the measure has produced perverse behavior.

Let us refer back to our hypothetical FP clinic. The military providers (see Figure 2) have dropped down to around 300 visits per quarter (100 visits per month). If they are each in clinic 16 days per month, then they are seeing about six patients per day. The resource-sharing providers are seeing about 19 per day. However, the low productivity of the military providers may have nothing to do with their behavior – the administrative system(s) may be failing them.

If the templates are constructed with significant space designated for TRICARE Prime patients, nonprime patients will not be able to get appointments. Additionally, if the appointing team uses multiple types of appointment codes and steadfastly adheres to them, then another loss of patient care template space may occur.

For example, if our FP clinic offers 600 follow-up appointments per month for TRICARE Prime beneficiaries (because they want to achieve a high Prime access score), but only 55 of them are ever booked, what happens to the other 545? Are these appointments eventually released into the general pool of acute appointments for any eligible beneficiary? If so, how far in advance: 2 days, 1 day, an hour, or never? The FP clinic seems to have space available. Let us assume that our military providers average 19 template spaces at 20 minutes each per available day. If they are only seeing 6 to 7 per day, what is the problem? When the space is locked out to patients who need care, the AMEDD pays for that care several times over. The staff (capacity) already exists in the MTF (Direct YOE expense), the lower CHAMPUS-eligible workload costs the government a second time (BPA), and if the patient actually needs care and accesses the civilian network, then the government pays a third time (actual cost of medical care for a civilian provider). We call this the "Prime mistake," because the metric has caused unintended negative consequences.

One AMEDD MTF began addressing this difficult task of improving access and quality, without increasing costs, by reviewing the unused (but templated) appointments available. The project resulted in a significant reduction in "unavailable" appointments and improved access for beneficiary routine and wellness appointments by more effectively utilizing the available template. The business process change was successful and required no additional personnel.[12] This MTF may have struck a balance between utilization of excess capacity and TRICARE Prime access standards.

Implement Effective Business Practices

To improve the overall effectiveness of the resources available to the AMEDD, we may need to further invest in beneficiary wellness and the utility of health promotion/ preventive medicine. The ambulatory care task force recognized the importance of health promotion and preventive medicine. The task force emphasized the role nursing plays in attending to the health promotion and disease prevention needs of the patient. The task force suggests scheduling follow-on appointments, telephone follow-up, or arranging referrals to other disciplines (social work, family advocacy, etc) if sufficient time is not available for appropriate patient education during the normal visit.[17] There has been reluctance by the civilian health care community to fully embrace health promotion and preventive medicine. The three major reasons for the reluctance are: this concept is markedly different from the acute-care delivery system in-place throughout the country; patients are not willing to readily accept behavior change as a treatment option; and it is difficult to quantify the positive effects of prevention efforts. Another issue is that the reimbursements for preventive care do not make this a profitable business venture.[18]

The findings by Lantz, et al may have implications for the AMEDD.[19] Personnel in the lower pay grades, although they are often younger, and some military retirees may be at significantly greater risk of being overweight, higher likelihood of smoking, and lower levels of physical activity. Those risk factors could increase their chances of suffering from diabetes, heart disease, and several forms of

cancer. The need for information combining pay grade data, health-risk appraisal information, and type of military work may be useful in development of health care management programs. More importantly, these data are available in multiple HMISs to the MTF for use in improving the health and wellness of their beneficiaries.

Conclusion

It is clear that the current financial and operational situation requires a team effort to meet these daunting challenges. The AMEDD must count on the MSC officers to enhance the decision-making processes within the AMEDD. Specifically, the MSC officers have been assigned three crucial mission elements that they must perform very well in order for the AMEDD to be successful. These crucial mission elements are: to integrate and synchronize resources; to gain an understanding of health care policy and the implications on the AMEDD; and to implement business practices that maximize the efficiency and effectiveness of the delivery of health care services. The primary mission elements to successfully achieve this must be to understand the data systems, assume responsibility for the accuracy of the data systems, and finally, conduct relevant and accurate data analysis. Another tool for achieving the Corps Chief's vision must be an active mentoring and coaching program directed by the senior MSC officer in the organization. This officer must help provide career development for the junior MSC officers by ensuring these young officers understand the critical elements of successful job performance at their current level and one level higher within the organization. With the steadfast and professional support of the administrative MSC officers, the AMEDD will be better positioned to achieve The Surgeon General's Vision.

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Decision and Avoidance: Mobilization for Korea and Vietnam

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The U.S. Army Medical Department's (AMEDD) response to the challenges of fielding a wartime medical support system for the Korean and Vietnamese conflicts comprised a study in contrast. The Korean War came as a total surprise for an AMEDD wracked by post-World War II (WWII) economies and personnel shortages. Its ultimately successful response to the 1950 crisis hinged upon immediate activation of reserve units and an unchallenged return to the conscription of physicians for immediate service. The deployment of major American ground combat forces to the Republic of Vietnam in March 1965 followed a U.S. Military involvement in that region which had grown steadily since the commitment of the first American Advisers in 1955, yet the creation of a medical support system deployed within South Vietnam was hampered by a general mobilization effort (or noneffort) which has been characterized as "a political and military catastrophe." Although the AMEDD did not make the general policy decisions determining its configuration and strength in either conflict, it had to live and work with the results. The nation's response to its commitment to involvement in the Korean and Vietnam wars reflected fundamental changes in both the style and substance of the political leadership which made those decisions.[1]

The Hollow AMEDD

When the U.S. Army found itself confronting a major war in Korea in June 1950, the Medical Department shared in that service's general unpreparedness for such a crisis. In mid-1950, the U.S. Army was a 14-division force with a legislated strength of 630,000 officers and men, but an actual field strength of only 591,497 personnel. Budgetary limitations kept most divisions understrength by at least one quarter of their authorized establishments. The nondivisional units were totally inadequate to support any of these divisions under combat conditions. Mobilization equipment and supply stocks consisted of WWII-vintage materiel and were intended to support a conflict waged in Europe.

All were below planned inventory levels, unbalanced in content, and poorly maintained. It was in virtually every sense of the term a "hollow" Army, sustained by a Medical Department which was still caught in the throes of a postwar downsizing and retrenchment process which was dubbed "the Great Unraveling" by one historian of the period.[2]

At the peak of WWII, the AMEDD had mustered roughly half a million commissioned and enlisted personnel to support a force whose cumulative strength totalled 10,420,000 troops. Between the onset of mobilization in 1940 and the war's end, a total of 45,000 civilian physicians had been called to serve with the department in an effort which ultimately saw 40% of the nation's practicing physicians serving the medical needs of 8% of its manpower. It was a medical force which proved to be as evanescent as it once was vital.[3]

The rapid decline of the service's medical capabilities in the immediate postwar period came under the scrutiny of the newly-organized Department of Defense (DOD) in 1947. Economy and preparedness were the dominant, if not necessarily complementary, priorities of the department at that time, and Secretary of Defense James V. Forrestal empanelled a committee that December to study

the question of the armed forces' joint medical needs. Officially dubbed the "Ad Hoc Committee on Medical and Hospital Services," This body became better known as the Hawley Board, for it was chaired by Dr Paul R. Hawley, Chief Medical Director for the Veterans Administration and a former major general in the U.S. AMEDD.[4]

The Hawley Board responded to influence exerted by the American Medical Association by urging the creation of a joint military-civilian policy advisory group in the wake of congressional discussion of reviving the Selective Service Act. By that time (mid-1948) the AMEDD counted only 5,000 physicians still in service, and confronted a continuing shortfall of 1,800 regular Medical Corps officers alone in its personnel requirements. Out of the 5,000 doctors still on active duty, a majority were post-1942 inductees, of whom the most junior were slated for discharge no later than November 1949.[5]

Secretary Forrestal heeded Hawley's advice, and in November 1948, he established the Armed Forces Medical Advisory Committee. Headed by a civilian hospital trustee, Charles P. Cooper, it mustered nine civilian physicians as well as the chief medical officers of the Army, Navy, and Air Force. At the time of this body's creation, the AMEDD was both weak in raw numbers of personnel and devoid of a proper balance of the diverse skills needed to sustain effective wartime medical care. In mid-1948, a member of The Surgeon General's staff publicly lamented that "we have about one-seventh of the number of highly qualified professional experts we need, while at the same time we have about twice the number of administratively trained officers we need." There was also a marked shortage of nurses on the rolls, with the projected shortfall estimated from 3,800 to 5,700 officers by 1949.[6]

The Cooper Committee focused upon the problem of alleviating the shortage of military physicians while avoiding a resort to the conscription of unwilling civilian doctors. At its request, Secretary Forrestal initiated a recruiting campaign to encourage voluntary returns to military service by civilian doctors and dentists in February 1949, while simultaneously requesting that the committee study a recommendation made by the Joint Chiefs of Staff for the creation of "a completely unified and amalgamated (single) medical service." Forrestal already favored such a concept, but the Cooper Committee adamantly rejected it. There was even discussion of assigning control of all continental United States (CONUS)-based military hospitals to a proposed National Bureau of Health. The entire postwar period was thus, for the AMEDD, an interval of poverty of means and frequent confusion of ends.[7]

Forrestal's successor, Secretary of Defense Louis A. Johnson, accepted the Cooper Committee's finding that a full-time Director of Medical Services be named to articulate and control the medical policies and programs of all the armed forces. Accordingly, Johnson established the Medical Services Division of the Office of the Secretary of Defense in May 1949, which was later redesignated as the Office of Medical Services. Johnson empowered its director, Dr Richard L. Meiling, to establish and control "general policies, standards, and programs" for all components of the military medical community. In June 1949, the Office of Medical Services absorbed the mission of the defunct Hawley Board as well, while the Cooper Committee remained intact as an advisory body to the Secretary of Defense. Despite Meiling's charter for oversight, unification of the disparate military medical systems remained in the realm of speculation, as the individual military departments retained effective control of their own medical programs.[8]

Saving the Bacon

The AMEDD continued to cope as best it could with a persistently bleak situation. Staff members at several major Army hospitals grew accustomed to working 72 hours per week to keep those facilities functioning, and although Congress gingerly discussed the possibility of reviving a peacetime draft of physicians, the idea died in the face of bitter opposition from the American Medical Association. By mid-1949, the ratio of doctors to troops had fallen from the traditional six per thousand to a peacetime low of 3.8 per thousand. Medical capabilities suffered further when a cost cutting Congress mandated the eventual closure of four general hospitals and two station hospitals over the course of the following year. The personnel shortage was obviously destined to get worse before it got better. "The time of most severe depletion,

everyone agreed, would come about June 1950," noted historian Albert Cowdrey in his study of the period.[9]

The onset of war in Korea on 25 June 1950 found the entire defense establishment unprepared for the crisis. The U.S. Far Eastern Command's medical assets were immediately overtaxed by the influx of American casualties from the embattled peninsula. Only 10 months before the war erupted, the command's senior surgeon, Brigadier General Edgar E. Hume, had published a lengthy article in The Military Surgeon which emphasized the accomplishments of the AMEDD component of Japan's American military government. Hume's article did not even mention the medical support provided to the garrison troops. It, instead, concentrated upon a discussion of the contributions being made to the development of a modern public health and welfare organization for the native population. That concern quickly receded in importance as growing numbers of sick and wounded Americans were airlifted to Japan from the war zone, only to find that there was but a skeletal medical support organization there to receive and care for them. The 141st General Hospital in Tokyo, Tokyo Army Hospital, Osaka Army Hospital, and the 35th Station Hospital in Kyoto were all described as being "for the most part, paper organizations."[10]

Immediately prior to the outbreak of war, the Far Eastern Command had lost two groups of Medical officers. Among them were the wartime-trained products of the old Army specialized training program, whose period of obligated service had expired, as well as some members of a civilian internship program, who had likewise completed their 2 years of active service for every year of government-funded training received. Between January and June of 1950, the command's complement of medical officers had fallen from 264 to 197, in the wake of a peak strength of 330, which had been reached in mid-1949. The command had responded to these losses by hiring 54 short-term civilian contract physicians and obtaining a planned 147 doctors due to reassignment to Far Eastern Command in August and September 1950. Even so, there were but half of the authorized complement of doctors present for duty in Japan when the war began that June. "A minimal medical establishment was keeping on top of the command's problems because the command itself was understrength, its duties those of peacetime, its environment far healthier than in the early days of the occupation, and its own health consequently good. Upon this scene, war burst like a thunderclap."[11]

The skeletal nature of the Japan-based medical support system reflected the anemic condition of the four divisions which comprised the 8th Army when it was committed to combat operations in Korea from garrison duty in the occupied nation. Eighth Army Surgeon, Colonel Chauncey E. Dovell, responded to the wartime needs of this force by activating three MASH units in July (the 8055th, 8063rd, and 8076th). These were the first such units of their type seen in that theater, for the MASH concept had not become part of officially sanctioned organizational concepts until 1948. All of Dovell's MASH units were severely understrength and none boasted a full complement of fully qualified surgeons. Many were staffed by residents. All were in action in Korea by 26 July 1950.[12]

The medical mobilization effort at higher organizational levels back in CONUS bore the same earmarks of having been sired by expediency and born of desperation. The overall U.S. Army mobilization plans of 1950 were rooted in the scenario of a conflict being waged in Eurasia at force levels comparable to those of WWII. There were no plans for the conduct of a limited war in Asia and the partial mobilization of resources necessary to support such a contingency. The regulations governing the sequence of actions to be executed upon mobilizations were thus inadequate for the conduct of a partial and gradual mobilization.[13]

All echelons of the DOD's medical care structure were unprepared for this war. In June 1950, the combined military services had available 37,377 hospital beds, of which 19,734 were already occupied by military patients. In expectation of an influx of evacuated casualties, Secretary of Defense Johnson authorized immediate measures for improvised expansion of the existing facilities, barred admission of any additional Veterans Administration patients to military hospitals, and ordered the reactivation of all the recently closed facilities. Within a year, just under 89,000 beds became available in military hospitals, of which 47,564 were occupied by military patients.[14]

In terms of materiel, the most urgent requirement was for blood plasma. A blood plasma program went into effect on 1 July 1950 at the DOD Level, and Secretary Johnson subsequently designated the American Red Cross as the official collecting agency for the armed forces. The WWII stocks of blood plasma were also reprocessed for use. Despite heavy continuing demands, particularly for whole blood, and some problems in the collection system, no theater-wide shortage of blood plasma ever developed in Korea.[15]

The most pressing problem of mobilization lay in providing the requisite numbers of both individuals and units to sustain the effort in Korea while not depleting the nation's mobilization base. The need for doctors, dentists, nurses, and other professional medical staff in Korea was the imminent critical challenge. The physician shortage was alleviated in the short-term by the accelerated reassignment of the 147 Medical Corps officers that had earlier been scheduled to reach Far Eastern Command in August and September. Surgeon General Bliss had also added all the other physicians who could be spared, and by mid-August, another 240 physicians had arrived in-theater for duty. These actions contained the immediate crisis.[16]

The mere presence of large numbers of physicians on the scene in Korea at that time would not have been a guarantor of success in the treatment of combat casualties, however. The nature of their individual backgrounds and training were the key determinants of their effective performance in the crisis period. Herein lay one of the justly claimed success stories of the mobilization effort. In the early postwar years, the AMEDD had created a system of postgraduate medical education for both serving officers and civilian physicians seeking additional training and reserve commissions. Five service hospitals hosted residency training programs as formally designated teaching facilities, and by mid-1948, a total of 376 residents were in training under this program. At the same time, the department initiated a program by which residents and interns in civilian hospitals could receive commissions even as they remained in place to continue their training. Selected regular officers were also provided training in civilian hospitals.[17]

The recent graduates of these programs bore the brunt of the effort in the critical early months of the Korean War. "At a time when the draft had not yet come to solve the problem of procuring doctors, this accomplishment belonged to the Medical Service almost alone, to its cadre of experienced officers and men, and to its highly educated newcomers who occupied the most forward positions," asserted an official history of the medical effort. Although casualties exceeded all predictions during this period, hospital death rates were the lowest in the history of warfare. Following a tour of the Far Eastern Command, the chief civilian consultant to The Surgeon General in neurology and psychiatry reported that "I feel that (the Army residency training program) saved the bacon in the Korean War, and if it can never demonstrate another value, this alone proved its worth."[18]

Return to Conscription

Although the shortage of physicians was alleviated at least for the opening 6 months of the war, the larger mobilization process was still fraught with shortcomings. Far Eastern Command's immediately stated requirements for service units called for the deployment of over 200 company-sized chemical, engineer, transportation, and medical contingents, involving a total of 43,472 officers and men. At that time (July 1950), the Department of the Army had only about 150 company-sized service units in CONUS. The medical units were among the scarcest, and the Army initially confronted the seemingly extreme options of either sending only small cadres from such units to Japan and Korea to serve as the nuclei of new formations organized in-theater, or that of committing every technical service unit in CONUS to duty in the Far East. Such a gutting of the general reserve would have had a disastrous impact upon the mobilization base. Thus, the service was forced to rely upon the expedient of instead, holding minimal cadres at home in CONUS while dispatching approximately 80 service support units of all types to that theater at about 65% strength.[19]

As the defeated American and South Korean forces withdrew to the relatively small area encompassed by the Pusan Perimeter in southeastern Korea, the medical situation began to stabilize in accord with the tactical scenario. By that time, President Truman had directed Secretary of Defense Johnson to authorize the separate military departments to order into active service such units and individual members of the Reserve Components as

were required. In the meantime, plans were drafted which enabled the DOD to attain four essential mobilization objectives: (1) to procure officer personnel needed for the medical services; (2) to obtain these personnel via an equitable system of priorities; (3) to receive guidance from civilian authorities concerning the individuals and the number of them to be called to service; and (4) to transfer officers of the medical services from one branch of the armed forces to another as needed.[20]

On 9 September 1950, Public Law (PL) 779, 81st Congress, was approved as an amendment to PL 759, the Selective Service Act of 1948. Generally known as the "Doctor Draft Law," this legislation established priorities for the registration and induction of individuals in medical and allied specialties. Candidates for induction designated as Priority I were drawn from doctors and dentists who had received all or a portion of their medical educations at government expense during the WWII-era V-12 program, and who had subsequently served less than 90 days active duty since 16 September 1940. Priority II candidates were selected from the ranks of those who had similarly received government-sponsored medical educations, but who had served for more than 90 days but less than 22 months. Priority III classification embraced physicians who had not served in the military medical services in any capacity since September 1940. These were largely younger men who had been trained at their own expense since WWII.[21]

The law prohibited, with certain exceptions, the induction of individuals in any priority group until the supply of candidates in higher priorities had been depleted. By presidential proclamation of 6 October 1950, the date of 16 October was fixed for the opening of registration under the new law.[22]

When this legislation was passed, the AMEDD tallied a shortage of 1,729 physicians. Many Priority I Induction candidates responded by seeking commissions in the U.S. Navy or U.S. Air Force in order to avoid the possibility of being tapped for service with the Army, which seemed to offer greater risk of being posted to duty in the war zone. To circumvent this development, the DOD established distribution controls which applied to all three services.[23]

In an effort to meet the Army's immediate needs, the Secretary of Defense, on 29 September 1950, directed the Department of the Navy to activate 570 Medical Corps Reserve officers in Priority I status for assignment to the AMEDD, effective 15 October 1950. Ninety-eight Navy physicians arrived in-theater during the last 2 months of the year to help deal with the casualty burden in Korea. By that time they, their AMEDD colleagues, and the remaining civilian candidates for induction still at home in CONUS, must have looked forward to a hasty end to the war. In mid-September, General MacArthur had hurled an invasion force ashore at Inchon, routing the enemy defenders and striking rapidly inland. By the end of the month, Seoul had been liberated from the enemy and the North Koreans were in headlong retreat as the simultaneous breakout from the Pusan Perimeter to the south threatened to trap them between the hammer and the anvil of the advancing United Nations forces. Victory seemed to be assured and the first critical phase of mobilization appeared to have also been the last. As the resurgent American forces marched north toward the Yalu River, their hastily fielded medical support system continued to provide superb care under the most trying conditions. Regulars and Reservists alike, from the lead rifle platoon in the advance to the rearmost hospital corpsman in Japan, savored the triumph and anticipated a possible end to the war by Christmas. Far to the north in Red China, another mobilization effort was quietly underway.[24]

The Korean War was never dignified with a formal declaration of hostilities by the American government. It was a war limited in both the geographic and political senses. The objective was not to roll back communism throughout Asia nor to destroy the enemy's homeland and government, but rather to simply restore the status quo ante bellum on the Korean peninsula. Despite its marked differences in methods and objectives from most prior major American wars, the Korean adventure did cause the U.S. to reaffirm the historical notion that mobilization of the Army National Guard and other U.S. Army Reserve elements as both units and individuals was necessary in time of war and that reliance on such forces was as necessary in the nuclear age as it had been in the past. Two important qualifiers appeared to the principle of mobilization, however: (1) full mobilization might not

be necessary or desirable and (2) hasty mobilization might be needed with little time available to prepare mobilized forces for war.[25]

The Chinese intervention in the autumn of 1950 changed the complexion of the war and forced the U.S. to eventually mobilize and deploy a ground force which reached a peak strength of 1,538,815 personnel in all theaters before the Korean conflict ended in an armistice in July 1953. During the entire period of the war, the AMEDD had borne the responsibility of providing health care for 2,834,000 troops on a global basis with an average physician strength of 5,075.[26]

The controversial "Doctor Draft" provided for in PL 779 had little impact during the critical early mobilization period of June-December 1950. The 6,000 physicians classified as Priority I candidates were given ample incentive by the law's passage to seek reserve commissions which seemingly promised more attractive duty billets with the air or naval arms, but such actions did not assure avoidance of Korean service, as 570 U.S. Naval Reserve physicians discovered in September 1950, when the Secretary of Defense directed their reassignment to the AMEDD.[27]

No drafted doctors arrived for service in Korea until January 1951. By the end of the following August, the Medical Field Service School at Fort Sam Houston, TX, had provided initial training to over 2,500 Medical, Dental, and Medical Service Corps officers entering active service for the first time. From that point onward the draft became the major supplier of medical officers, and by 1952, more than 90% of the medical officers required for Korean service were procured via conscription. Although the regulars and Reservists bore the brunt of the load during the war's hectic opening 6 months, the medical war in Korea ultimately proved to be a draftee's conflict for the physicians.[28]

Although most medical units in Korea and Japan operated with less than their officially authorized complement of personnel, they functioned effectively and provided a high standard of care. In terms of raw numbers, there was virtually no shortage of physicians, although certain medical specialties remained in chronically short supply. Ironically, there was major criticism levelled at the AMEDD on the grounds that it had forsaken practical military field medicine in favor of emphasizing advanced professional training, with the result that many Reservists and draftees felt that their training had not adequately prepared them for the realities of wartime medicine.[29]

The debate over enhanced professional specialization training versus increased emphasis on practical field medical skills was never resolved to everyone's satisfaction, but the fact remained that the medical care provided to the troops in Korea and Japan was comparable, if not markedly superior to, the quality of care rendered during WWII at the climax of a long-term total national mobilization effort.

The doctor draft legislation was the nation's first attempt to fill a specialized military manpower need via the conscription of personnel recognized, identified, and made liable for compulsory service as professionally skilled specialists. Public Law 779 expired on 1 July 1953, meeting its demise almost simultaneously with the declaration of an armistice in Korea, but on 29 July 1953, the passage of PL 84 extended its provisions until 1 July 1955. Although revisions were made in the priority categorization governing the selection of inductees, the law still served as a means of motivating civilian physicians to voluntarily seek and retain reserve commissions rather than expose themselves to the vagaries of service as draftees. Further incentive was provided by the passage of PL 403 on 18 June 1954, which authorized induction of physicians, dentists, and those in allied specialties in an enlisted grade if they failed to qualify for commissions.[30]

Although the Universal Military Training and Selective Service Act remained in force to govern the Administration of the general peacetime draft system until 1 July 1959, the doctor draft was maintained only through 1 July 1957. The supply of military physicians proved adequate for the 1958-61 period without recourse to the draft. Nevertheless, subsequent legislation passed in March 1959, in the guise of PL 86-4, gave the president authority to induct doctors and related specialists as required or to order Reservists to 2 years of active duty if needed. Four years later, PL 88-2 extended such induction authority until July 1967. Such was the legislative background governing physician procurement from civilian life prior to the direct American involvement in a major land war in Southeast Asia.[31]

Between the close of the Korean War and the onset of the Vietnam conflict, the U.S. weathered another mobilization crisis in 1961 as it confronted the Soviet Union over the disputed status of Berlin. The October partial mobilization of the Army National Guard and U.S. Army Reserve forces came at a time when the active duty U.S. Army stood at a strength of 859,000 troops, which was 11,000 men below its authorized ceiling. The normal prevailing draft calls at that time tapped 8,000 men per month. With the onset of the Berlin confrontation, President Kennedy sought and received congressional authorization to increase the draft call by 4,000 men in August 1961, reaching a monthly level of 22,000 men by September. A total of 119,622 guardsmen and reservists in all of the services had been activated for duty by November 1961. The impact of this partial mobilization on the military medical community was muted. The Army was the greatest consumer of draftee physicians, and Surgeon General L.D. Heaton noted that "the Berlin Crisis and the increase in the strength from 870,000 to 1,066,000 as of 30 June 1962 made it necessary to draft approximately 700 physicians into the Army during the third quarter of FY62. A cyclic requirement was then established . . . for the draft of 700 physicians in the fourth quarter of FY63. Delivery of the medical registrants was to be made in the first quarter of FY64." In order to avoid disruption of the professional training programs underway in civilian hospitals, The Surgeon General agreed that draft calls of physicians during this period would be limited to July and August of each year, barring any national emergency.[32]

The circumstances prevailing during the Berlin Crisis were essentially the same as had existed during the Korean War and would be found again during the Vietnam involvement. Those physicians called for Service were typically drawn, in the majority, from among the ranks of the most junior members of the profession, for those just completing their internships were assigned the highest priority for induction. The result was an Army Medical Corps which was imbued with energy, but whose officers typically lacked depth and breadth of experience, for at any given time between 1950 and 1970, fully 61% of the military physicians had less than 2 years of service, and 87% had completed less than 10 years practice in military medicine.[33]

The U.S. had maintained a cadre of military advisors in the Republic of Vietnam since the mid-1950s, and by 1963-64, a total of 16,000 American military personnel were posted in the former French colony. As early as December 1961, the DOD had surveyed anticipated American troop levels in-country and decided to commit a field hospital of 100-bed capacity, with four attached medical detachments and one helicopter ambulance detachment to support the advisory force. This unit deployed and was operational by 18 April 1962, serving as the 8th Field Hospital at Nha Trang. During the interim, arriving Army units (mostly transportation companies) were supported by three small medical detachments, which deployed in January-February 1962. By the end of that year, the number of detachments providing area medical care for American forces and drawing their supplies from the 8th Field Hospital had doubled. Added to the American medical presence by the summer of 1964 were a Navy dispensary in Saigon, another such facility at Danang, and a U.S. Air Force dispensary at Tan Son Nhut Air Force Base.[34]

A Steady Increase

In August 1964, the alleged attacks staged by North Vietnamese naval craft against American warships in the Gulf of Tonkin initiated the sequence of events leading to the direct commitment of American ground combat units to the war by the following February. At that time, the American medical presence in the theater of operations was still so small as to not even rate a passing mention in the Annual Report of The Surgeon General for the years 1963 and 1964. The situation changed swiftly in the New Year. In April 1965, the 3rd Field Hospital arrived in Saigon and by year's end two surgical hospitals, two evacuation hospitals, and several numbered field hospital units had been deployed to South Vietnam. By the end of 1965, American medical units boasted a total of 1,627 hospital beds in-country. By that time, Lieutenant General Heaton and MACV Commander General W.E. Westmoreland had decided to commit the 44th Medical Brigade as well. That unit arrived on 18 March 1966, and from 1 May 1966 through 9 August 1967, the period of the most rapid buildup of American combat forces in Vietnam, medical units and personnel, both divisional and otherwise, grew apace. By January 1967, the 44th Medical

Brigade controlled 121 medical units with a total of 7,830 assigned personnel. The brigade's commander also served as Surgeon, U.S. Army, Vietnam.[35]

The period of 1959 to 1965 saw a steady increase in the size of the AMEDD as the cold war kept the American armed forces at historically unprecedented strength levels. The peak years of the Vietnam Conflict brought a roughly 30% burst of personnel growth to the department by the end of 1968. By that time, its total strength stood at 20,482 personnel from an authorized strength of 21,299. Although the AMEDD had experienced a chronic shortage of officers in the Nurse and Medical Specialist Corps, there was never a critical deficit of physicians during the incremental expansion of American ground strength in Vietnam, for at its maximum strength during this period the department mustered 6,251 doctors against an authorized strength of 6719. The AMEDD successfully supported a total Army force of 1,570,343 personnel on a global basis at the height of the war in Southeast Asia, with a ratio of 4.3 physicians for every thousand troops.[36]

Unlike Korea, which came as a total surprise to a force gutted by postwar neglect, the conflict in Vietnam was the product of a preplanned and carefully phased incremental escalation of troop strength drawn from the existing military forces and sustained by a draft of personnel from the civilian sector instead of a mobilization of U.S. Army Reserve units or members of the Individual Ready Reserve (IRR). Indeed, the contest was fought in such a way as to deliberately avoid mobilization of the nation to sustain a declared war. The National Command Authority deliberately sought to avoid any movement toward a general mobilization for fear that it might divert resources and public enthusiasm from the primary domestic objective of wide-ranging social reform based upon waging an alleged "War on Poverty." President Lyndon B. Johnson feared that mobilization might arouse the American people to a full-blown recognition that they were involved in a major war, with the result that they might demand decisive action be taken to achieve a rapid and clearly discernible victory. This, in turn, might enlarge the conflict, he feared, by bringing the Soviet Union or the Peoples Republic of China in as combatant powers. The result was that after 34 months of active engagement and the commitment of a total force of 470,000 men, no mobilization effort had been mounted by the American government.[37]

No "Stand-Down"

The seizure of an American naval vessel by the North Koreans in January 1968 prompted the activation of 28 reserve units totaling 14,801 individuals, but no Army personnel were involved, and the incident did not provoke the activation of any Army National Guard or U.S. Army Reserve units for deployment to Korea or Vietnam. Even the shock of the enemy's Tet Offensive in January 1968 failed to generate a move toward national mobilization. Not until March of that year did the White House accept the notion that even a partial mobilization effort was necessary to sustain operations in Vietnam, and even then, it kept the proposed call-up limited to about 24,500 personnel drawn from 88 selected Reserve units and 3,600 members of the IRR. The 13 May 1968, mobilization ultimately activated only 76 units with a combined strength of 20,034 troops and but 2752 IRR members. Forty-three of these units deployed to the Republic of Vietnam, while the balance were held in CONUS. This action was far too late and too limited to be of any genuine political or military significance. In all, a total of 10 Army National Guard or U.S. Army Reserve medical units were activated and sent to Vietnam, with two other medical units remaining in the U.S. for the duration of the mobilization period, which ended in December 1969. The impact upon civilian medical practitioners was miniscule.[38]

By the time of the 1968 "mini-mobilization," the draft had already made itself felt in the medical community. The first wartime calls came in FY65, when 695 physicians were inducted, followed by 2,638 a year later, and 2004 and 2,111 respectively in FY67 and FY68, which marked the maximum period of physician draft calls during the conflict. These numbers were markedly higher than the draft calls recorded during the Korean War, but they reflected a radically different situation. The military medical mobilization for Korea was rapid and born of crisis, but it was charged with supporting a distinctly smaller force operating in a theater which was directly accessible to additional medical assets located in Japan. The medical buildup for Vietnam was accomplished in a pre-planned, methodical manner to support a larger force over a greater span of time. Unlike the doctor draft calls for Korea, induction for military service in the 1960s should not have come as a surprise for reservists and their civilian colleagues who lacked any prior military

service, for the post-Korea Cold War commitments of the U.S. had demanded a continuing draft call for doctors throughout the 1950s and into the succeeding decade. Between 1955 and 1961, the armed forces had required the services of an average of over 10,000 doctors each year. By 1965, the yearly average had increased to 12,100. The majority of them were draftees, for between 1950 and 1968, the U.S. Army Medical Corps had typically mustered two-thirds of its strength from conscripted doctors serving 24 to 36 month tours of duty. Poor retention rates for military physicians during this period dictated that the yearly turnover rate among the combined services totaled from 10 to 35%, and this unavoidably influenced the number of their civilian colleagues selected for induction during the post-Korean War period.[39]

The Korean conflict elicited at least a semblance of a national mobilization effort to meet the challenge of conducting a sustained land war in a different hemisphere, while the Vietnam adventure was orchestrated to avoid even the appearance of a partial national mobilization. In very practical terms, the distinctions were very largely lost upon the American medical profession, for it had remained subject to the dictates of a state of semimobilization in order to meet the needs of an expanding military establishment since 1950. Unlike the bulk of other, nonmedical specialized civilian professions and their member reservists, the doctors had never enjoyed a "stand-down" from the obligation of national service. In 1969, the DOD laid claim to approximately 5% of all physicians registered by the American Medical Association under circumstances voluntary or otherwise. During the 1963-68 period, physician draft calls amounted to a number (4000 per year) corresponding to over half of the total graduating classes of the nation's medical schools during the same time span.[40]

The U.S. fielded a superior medical support system for its armed forces in both Korea and Vietnam. That much cannot be denied. It is also clear that, however hasty, the mobilization of medical resources for the Korean War was accomplished without political equivocation on the part of the National Command Authority or discernible protest or resistance on the part of the civilian physicians called to serve. Fifteen years later, the conscripted physicians were still forming the backbone of the military medical support system as the nation entered a war in which its political leadership lacked the candor and will to acknowledge it as such and respond to its demands with open mobilization.

Throughout the entire Cold War period from 1950 through the early 1970s, the American medical profession bore a disproportionate share of the burden of service and sacrifice among the specialized professional groups in that society's civilian population. Few draftee physicians from Pusan to Saigon served with eager cheerfulness, but the vast majority of them served with skill and honor in times of open war and fretful peace alike. In Korea, the reservist and draftee physicians both shared the burden. In Vietnam, it was largely the draftees and regulars who met the challenge. In retrospect, the manner in which both the nation and the medical profession were brought into the Vietnam debacle summoned to mind certain lines from Stephen Vincent Benet's epic poem, "John Brown's Body":

> Some men wish evil and accomplish it but most men, when they work in that machine, just let it happen somewhere in the wheels. The fault is no decisive, villainous knife but the dull saw that is the routine mind.

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Nursing Readiness: Active Duty vs Army Reserve

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Introduction

The purpose of this study was to apply a psychometric tool for readiness assessment, the Readiness Estimate and Deplorability Index (READI), to new Army Nurse Corps (ANC) officers attending the U.S. Army Medical Department (AMEDD) Officer Basic Course (OBC). Because of increases in the number and duration of deployment missions, Army leadership needs to ensure that ANC officers are prepared to perform skills and functions critical to patient care in a field environment. The READI is a survey questionnaire of self-reported competencies and behaviors based on six dimensions of readiness: clinical nursing competency, operational competency, survival skills, personal and psychological readiness, leadership and administrative support, and group integration and identification. Convenience samples of 118 active duty and 53 Reserve Component ANC officers enrolled in the OBC participated in completing the instrument.

Analyses reported here were limited to the first three READI dimensions. Results for both groups indicated that the internal consistency of item responses was found to be highly stable and reliable as assessed by Cronbach's coefficient alpha (from .74 to .95). These findings offer evidence for the expanded application of the READI model to differing ANC populations to provide meaningful and consistent assessments of readiness. Comparative results were summarized by a series of newly developed graphic panoramic displays (GPDs). The U.S. Army Reserve nurses reported significantly higher levels of clinical and operational nursing competency than active duty nurses. However, the trend was reversed for items within the soldier survival skill dimension. Findings from this study provide definitive evidence for the utility of GPD comparisons of cohort groups to identify readiness differences between groups and provide detailed indicators in formulating readiness forecasts and training needs in preparation for future deployments.

Today's AMEDD personnel face a wide variety of missions. In addition to caring for service members and other eligible beneficiaries during peacetime, medical units must train and prepare to support deployed forces around the world. Medical units have typically focused training on supporting conventional warfare operations, where emphasis is placed on rapid triage, resuscitation, stabilization, and evacuation. However, in recent years, many medical deployments are supporting military operations other than war (OOTW), such as peacekeeping, humanitarian assistance, and disaster relief.[1-7] Although there have been elements of combat risk in these missions, logistical support and community health needs have become equally important.[8,9]

Given the increased frequency of military OOTW, ANC officers face greater opportunities to be deployed today and in the foreseeable future. Nurses need to periodically assess their individual readiness competency to ensure that they are prepared should they be called to deploy in support of a wide range of missions.

Although 76% of Army nurses are assigned to fixed-facility hospitals with computerized and automated equipment, their primary mission is to be prepared to

support deployed forces during military operations. Prior to the Gulf conflict, it was believed that everyday clinical experience in medical treatment facilities (MTFs) prepared nurses to provide care when deployed.[10] However, according to testimony before a congressional sub-committee, it was discovered during Operation Desert Storm that "many doctors and nurses had not participated in field training and were not familiar with their unit's mission or...supplies and equipment in the field hospital."[11] The lessons of medical experiences in the Gulf have also been discussed by Newman and France, and recently revisited by Bell, Amoroso, and Williams; both sources underscore the vital and crucial role of readiness in deployment.[12,13]

Shortly after the Gulf war experience, the senior leadership of the ANC recognized that there existed a need for readiness training at all levels.[14-16] Zadinsky reported that most nurses displayed a need for more training in subjects such as field medical equipment and evacuation, skills that are not performed in daily operations of MTFs.[10] Those findings also noted that many nurses believed that they did not have the opportunity to practice and become proficient in the skills that they must perform when deployed.

The AMEDD responded to the renewed focus on readiness. The Defense Medical Readiness Training Institute prepares tri-service medical personnel for future operations with training programs such as the Combat Casualty Care Course, Combined Humanitarian Assistance Readiness Training, and the Joint Trauma Training Center.[17] The Readiness Training Program for Nursing Personnel was implemented to enhance the competencies in those nursing skills performed in a field environment as well as proficiencies in battle-focused settings.[18] Specific concerns for readiness issues pertaining to Reserve Component nurses as well as active duty ANC personnel have also been recognized.[19]

Military operational readiness is defined as "the capability of a unit/formation, ship, weapon, or equipment to perform the missions or functions for which it is organized or designed."[20] Zadinsky defined military nursing readiness as the "ability of nursing personnel to perform skills and functions critical to their patient care role in a deployed or field status."[10] It is measured in terms of individual competency, which can range from knowing how to do a skill very well to not knowing how to do it at all. In order to clarify the concept of individual U.S. Army nursing readiness, Reineck conducted a nursing focus group study that defined individual nursing readiness as "a dynamic concept with dimensions at the individual, group and system levels, which together, influence one's ability to prepare to accomplish the mission."[16] Six dimensions of individual military nursing readiness were identified: clinical nursing competency, operational nursing competency, soldier survival skills, personal/psychological/physical readiness, leadership and administrative support, and group integration and identification.

Based on these six dimensions of individual readiness, Reineck et al developed the READI, funded by the Henry M. Jackson Foundation for the Advancement of Military Medicine and the Tri-Service Nursing Research Program.[21,22] Results of this initial pilot research were presented at the 10th Annual Asia-Pacific Military Medicine Conference in Singapore.[23] The index consists of 61-scaled attitude question items that assesses self-reported readiness competencies in each of six dimensions of readiness identified by the nursing focus group. In subsequent field trials, the READI was administered to three groups of Army nurses (total=93) representing both TDA and TOE units and was found to provide valid and reliable measures of individual nursing readiness. Comparative results from these trials were presented at the Association of Military Surgeons of the U.S., Karen A. Reider 13th Annual Nursing Research Poster Session.[24]

Although READI results were found to be consistent in field trials, 74 of the 93 nurses (83%) who participated in that initial application of the instrument were in the grade of captain. This is not entirely representative of the active duty ANC population, of which only 31% are in the grade of captain. Thus, the question was posed as to whether the READI provided meaningful results when administered to other cohort groups, such as new ANC officers; and, if so, what were the readiness competencies of these new ANC officers? Kovats and Morris studied a cross-sectional sample of 118 OBC students, predominantly lieutenant-grade nurses, and compared READI profiles to previous field trial profiles.[25,26] They found the READI to have similar levels of rating reliability and

psychometric properties across all nurses sampled. They concluded that the READI is applicable to diverse populations of all active duty ANC. The purpose of this study was to document a follow-on comparison of those 118 active duty OBC nurses with a sample of Reserve Component OBC nurses.

Method

Data collection was conducted by direct survey of a convenience sample of 118 ANC officers at the end of the core program of the AMEDD OBC and another survey of 53 Reserve Component officers. The OBC is conducted at the U.S. Army Medical Department Center and School at Fort Sam Houston, TX. All incoming AMEDD officers attend the 8-week long core program that instructs new officers in the performance of common soldier and officer-specific skills and provides an introduction and application of the concepts of combat health support. At the conclusion of the core program, nurses attend a separate, 2-week Nurse Corps Track which introduces the new Army Nurses to field nursing, deployment readiness, and other professional development issues. At the conclusion of the track, nurses are assigned to their first duty station, Reservists return to their sponsoring units and to their civilian nursing jobs.

Near the completion of the OBC, participants were briefed as to the purpose of the study. They were informed that participation was voluntary and all individual responses would be kept confidential. The survey questionnaire was then administered to the volunteering participants in a group setting. Completion time of the questionnaire items ranged from 30 to 45 minutes.

The READI questionnaire consisted of 61 scaled attitude items and 12 self-reported behavioral indicators, grouped by the six dimensions of readiness: clinical nursing, operational nursing, soldier survival skills, personal/physical/psychological readiness, leadership and administrative support, and group integration and identification. Additional items included 12 demographic information questions and six, short multiple-choice scenario questions. Due to space limitations, the analysis results of survey responses for this report were limited to the first three dimensions of the survey: clinical nursing, operational nursing, and soldier survival skills.

Analysis and Statistical Procedures. Data items were coded and entered into the Statistical Package for the Social Sciences data analysis program (SPSS version 10.0.5). Entries were double checked to ensure accurate data input. Scaled-attitude items were grouped by the readiness dimension they represented and Cronbach's alpha was computed for each dimension to assess inter-item reliability. Descriptive statistics were calculated and visually summarized as a series of unique GPDs. Inferential statistical comparisons were conducted with the Analysis of Variance (ANOVA).

Results

Demographic characteristics of the groups are presented in Table 1. Of the sample of 118 active duty nurses, nearly all were assigned to TDA units (79.7%) in the Medical Command (68.7%) and held the rank of lieutenant (94.1%). About two-thirds were female. In terms of nursing background, most were medical surgical nurses (87.3%) with an average of less than a year (.67) of experience. By comparison, of the sample of 53 U.S. Army Reserve nurses from various units, 98.1% were lieutenants, but over half were males. Nursing experience for the Reservists was somewhat different than active duty, with about one-third medical surgical, and 45.3% as either nurse anesthetists or critical care nurses reporting an average of 5.74 years of experience; about 8½ times more nursing experience than the active duty group.

Reliability of READI Item Ratings. Reliability results for each group were computed for the three READI dimensions using Cronbach's coefficient alpha and ranged from .74 to .95. Specific coefficients for active duty nurses obtained .95 for clinical nursing, .78 for operational nursing, and .91 for soldier survival skills. Similar indices emerged for U.S. Army Reserve nurses with .90 for clinical nursing, .74 for operational nursing, and .94 for soldier survival skills. These results were comparable to the demonstrated internal consistencies found by Reineck et al in an earlier study of active duty, predominantly Captain (O-3) ANC officers, and provide evidence that average ratings from the READI instrument are meaningful, consistent, and stable across several diverse ANC groups.[21]

Item Descriptive Statistics and GPDs. Figures 1

Variables	Active Duty n	Active Duty percent	Reserve Component n	Reserve Component percent
Military Background				
Type unit *				
Fixed (TDA)	94	79.7	13	24.5
Field (TOE)	6	5.1	12	22.6
Unknown	18	15.2	28	52.9
Assignment				
Medical Command	81	68.7	-	-
Force Command	11	9.3	-	-
U.S. Army – Europe	6	5.1	-	-
8th Army – Korea	3	2.5	-	-
U.S. Army Reserve	12	10.2	53	100.0
Other	5	4.2	-	-
Military Rank				
Second Lieutenant	109	92.4	35	66.0
First Lieutenant	2	1.7	17	32.1
Captain	7	5.9	1	1.9
Gender				
Female	77	65.3	30	56.6
Male	41	34.7	23	43.4
Ethnicity				
White	80	67.8	43	81.2
Black	17	14.4	4	7.5
Asian	6	5.1	2	3.8
Other	15	12.7	4	7.5
Nursing background				
Medical Surgical	103	87.3	20	37.7
Nurse Anesthetist	-	-	11	20.8
Critical Care Nurse	4	3.4	13	24.5
Nurse Practitioner	4	3.4	1	1.9
Emergency Nurse	-	-	4	7.5
Perioperative Nurse	2	1.7	2	3.8
Psychiatric Nurse	-	-	2	3.8
No response	5	4.2	-	-
Total years nursing experience**				
Mean (year)	.67		5.74	
Standard Deviation	2.33		6.26	

n = 118 active duty and 53 U.S. Army Reserve Component OBC U.S. Army nurses. Note:* Types of Units: TDA (fixed facilities), (field type units)

** Total years includes both civilian and military experience

Table 1. Descriptive Statistics of Demographic Variables Administration of the Readiness (READI) Instrument

through 3 present the computed item averages and standard deviations for the READI ratings of both nursing groups. At the top of each figure is a GPD which depicts a comparison of group average rating profiles plotted across specific READI items. The unique, innovative GPD concept for READI results was developed by Reineck et al resulting from a graphics workshop conducted by Edward Tufte of Yale University.[21] The GPDs incorporate two graphics principles, dimensionality and resolution.[27-29] The competency rating value dimension is indexed on the vertical axis; competency ratings could range from a low of one to a high of five. An item dimension is arrayed on

the horizontal axis and indexed to READI questionnaire statements below. Trace lines on the GPD show the plotted averages of items, one profile line for each group. Resolution, or amount of information graphically displayed, is shown by profile lines and the corresponding numeric reported means and standard deviations for groups in columns next to each READI item. Overall, average competency ratings for both nurse groups fell between 1.5 to 4.5, with item standard deviations of about one scale point. Use of the GPDs offers specific comparative information at a glance, easy to read with plotted responses relative within and between READI questionnaire sections. Use of GPD reporting has been successful in presenting READI results in a number of scientific and military medical settings.[21,23-26]

Clinical Nursing Competency. As shown in Figure 1, respondents reported moderate-to-high degrees of competency in calculating intravenous (IV) drips and burn patient body surface area, and conducting physical exams and assessments. Lower competencies were reported in field clinical documentation, care of nuclear, biological, and chemical and ballistic missile injuries, use of the field ventilator, and caring for refugees. Rating profiles for Reservists were generally about one scale point higher than profiles reported by active duty nurses.

Operational Nursing Competency. Respondents reported moderate competencies in 12-lead electrocardiogram performance, medical evacuation, and echelons of care knowledge (see Figure 2). Slightly higher ratings were reported for field sanitation and reporting unlawful acts. The lowest ratings by both groups were concerned with setup of the deployable medical shelter. Reservists' profiles were about one-third of a point higher than active duty nurses on most items.

Soldier Survival Skills. As shown in Figure 3, all items but one were rated above the mid-point vertical response scale value of three. Higher ratings included competencies with weapons and navigation, while the lower item ratings centered on decontamination and, especially, communications equipment. Interestingly enough, the earlier trend of a higher Reservist profile is reversed for soldier survival skills, with active duty nurses reporting competency item averages of about half- to one-scale point higher than their counterparts.

Inferential Statistical Comparisons. Three separate, unweighted means, 2 x k split-plot ANOVA comparisons were computed to test for differences in average ratings between the two nursing groups, while simultaneously testing for differences within the various k-item ratings for the dimensions of the READI survey.[30] Table 2 presents the results for each of the three READI dimensions. As shown, statistically significant differences emerged between groups on all three sections with $F(1,169) = 41.45$ for clinical nursing, $F(1,169) = 4.17$ for operational nursing, and $F(1,169) = 7.33$ for soldier survival skills. Notice that average profiles for U.S. Army Reserve nurses were higher than active duty item ratings on the first two dimensions, but the trend was reversed for the third dimension (see Figures 1 through 3 for trends). Within subject comparisons of items also emerged as statistically significant, and displayed differences in all three READI sections. These results indicated that nurses indeed differentiated among items in terms of their strength of response in making ratings. Tests for interaction were also significant for section one, Clinical Nursing, and section three, Soldier Survival Skills, but did not emerge for section two, Operational Nursing. These results indicated that while overall average differences existed between nurse groups, those differences vary from item to item in sections one and three, but for section two, average item difference profiles between group means display nearly a constant pattern.

Discussion and Conclusions

This application of the READI to specific cohort groups adds to the body of knowledge about current readiness levels among the U.S. ANC. The READI provides accurate measurements for evaluating the readiness level of U.S. Army nurses within the scope of the clinical and soldier readiness skills.

In observing the computed alpha coefficients for the three sections examined, this study replicates findings from previous studies. These results strengthen and extend the general usability of the READI questionnaire, ensuring that collected responses show consistency of measurement across diverse types of ANC units. Results from the ANOVA tests clearly demonstrate the ability of the READI to detect differences in the levels of readiness between ANC groups. In regard to this finding, it may be

Effect Sources	SS	df	MS	F	
I. Clinical Nursing Competency					
Between subjects	(2663.06)	(170)			
Nurse Group (G)	525.81	1	525.81	41.58	$P<.001$
Residual between subjects	2137.25	169	12.65		
Within subjects	(4874.27)	(4446)			
k=27 Items (I)	1329.30	26	51.13	68.10	$P<.001$
Interaction G x I	246.02	26	9.46	12.60	$P<.001$
Residual within subjects	3298.95	4394	.75		
Total	7537.33	4616			
II. Operational Nursing Competency					
Between subjects	(636.19)	(170)			
Nurse Group (G)	15.30	1	15.30	4.17	$P<.05$
Residual between subjects	620.89	169	3.67		
Within subjects	(928.55)	(855)			
k=6 Items (I)	212.78	5	42.56	50.79	$P<.001$
Interaction G x I	7.76	5	1.55	1.85 n/s	
Residual within subjects	708.01	845	.84		
Total	1564.74	1025			
III. Soldier and Survival Skills					
Between subjects	(1453.16)	(170)			
Nurse Group (G)	60.39	1	60.39	7.33	$P<.05$
Residual between subjects	1392.75	169	8.24		
Within subjects	(1267.56)	(1710)			
k=11 Items (I)	161.18	10	16.12	25.96	$P<.01$
Interaction G x I	57.05	10	5.71	9.19	$P<.01$
Residual within subjects	1049.33	1690	.62		
Total	2720.72	1880			

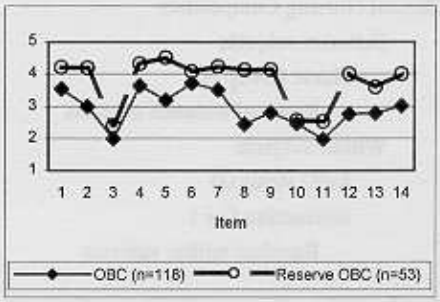
Note: probability associated with F statistic comparisons, n/s not significant.

Table 2. Inferential Statistical Tests for Differences Between Means of Nurse Groups and Within Mean Ratings of Items for Three Dimensions of the READI Instrument

speculated that this provides evidence of differences in recruiting trends, in that experienced nurses appear to have been targeted for initial entry into ANC Reserve units while less experienced nurses appear to be entering the ANC on active duty. Further, within ANOVA findings demonstrate the ability to measure detectable differences in terms of specific aspects of readiness as defined by the 44 items in this study.

The READI instrument has multiple applications. First and foremost, it can provide a quick assessment of the nursing readiness level of a unit, whether a fixed medical treatment facility or a field hospital. Chief nurses, as well as commanders, can assess the readiness level of their nursing personnel to determine how the unit perceives its preparedness for deployment and to identify any needs that will require additional training in field nursing skills. In particular, the development of the unique GPDs used in this study provide quick, easy to read, comparative profiles of readiness in a visual format. Profiles may be used in a variety of ways. First, separate groups can be compared to each other as was used in this study. Second, both active

Section one: Clinical Nursing Competency (k=27 items	Active Duty Mean	S.D.	Reservists Mean	S.D.
1 - Familiar with the different types of shock	3.5	.9	4.2	.8
2 - Competent in caring for hemorrhagic shock	3.0	1.0	4.2	1.0
3 - Competent in documenting in field environment	2.0	1.2	2.4	1.4
4 - Competent in IV drip calculations	3.6	1.1	4.3	1.0
5 - Competent in instituting standing orders	3.2	1.2	4.5	.8
6 - Understands and calculates body surface area burn patient	3.7	.9	4.1	.9
7 - Competence in deciding which patient is seen first	3.5	.9	4.2	.8
8 - Competence in performing ACLS protocol	2.4	1.3	4.1	1.2
9 - Competence in caring for life threatening injuries	2.8	1.1	4.1	.8
10 - Competence in caring for patient with NBC injuries	2.5	1.0	2.6	1.2
11 - Competence in caring for patient with ballistic missile injuries	2.0	1.1	2.5	1.2
12 - Competence in recognition of tension pneumothorax	2.8	1.3	4.0	1.1
13 - Competence in providing fluid resuscitation of burn patient	2.8	1.1	3.6	1.1
14 - Competence in using universal blood donor protocol	3.0	1.3	4.0	1.2
15 - Competence in caring for patients with disease and nonbattle injury	3.2	1.1	4.1	.8
16 - Competence in using field ventilator	1.7	1.0	2.7	1.3
17 - Competence in airway management	3.3	1.1	4.5	.9
18 - Competence in implementing triage categories	3.1	1.1	4.0	1.1
19 - Competence in assuming clinical team leadership	3.0	1.2	4.0	.8
20 - Competence in caring for refugees	2.3	1.2	2.4	1.1
21 - Competence in providing ante/post-partum care	3.2	1.2	2.4	1.1
22 - Competence in field infection control	3.2	1.1	3.4	1.0
23 - Competence in orthopedic nursing	2.9	1.1	3.5	1.0
24 - Competence in neurologic nursing	2.7	1.0	3.6	1.0
25 - Able to identify components of physical exam	3.7	1.1	4.2	.9
26 - Able to list five examination techniques to perform physical exam	3.4	1.3	3.8	1.1
27 - Able to perform a complete nursing assessment and interpret abnormal findings	3.7	1.0	4.4	.7



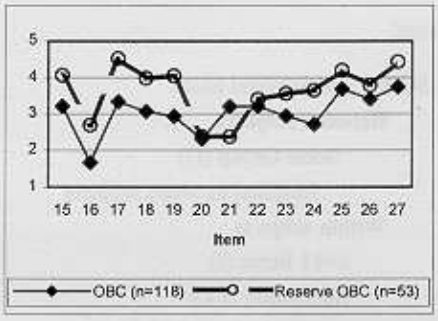


Figure 1. Panoramic display depicting READI profiles and a statistical comparison of active duty and U.S. Army Reserve nurses for self-reported clinical nursing competency (Items 1 through 27).

Section two: Operational Nursing Competency (k=6 items)	Active Duty Mean	S.D.	Reservists Mean	S.D.
1 - Competence in obtaining 12-lead EKG in given scenario	2.8	1.5	3.1	1.5
2 - Competence in evacuation procedures	2.5	1.1	2.8	1.1
3 - Competence in echelons of care operations	2.8	1.0	3.1	.9
4 - Level of competency in reporting unlawful acts	3.6	1.0	3.8	1.1
5 - Competence in field sanitation	3.6	.9	3.5	1.0
6 - Competence in DEPMEDS setup	2.0	1.3	2.5	1.3

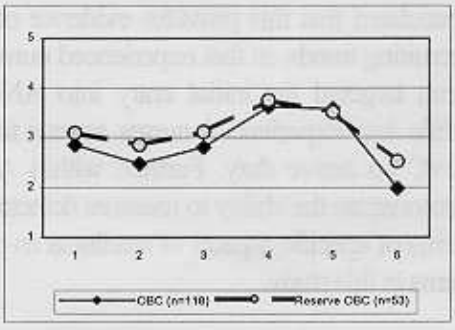


Figure 2. Panoramic display depicting READI profiles and a statistical comparison of active duty and U.S. Army Reserve nurses for self-reported operational nursing competency.

Section three: Soldier Survival skills (k=11 items)	Active Duty Mean	S.D.	Reservists Mean	S.D.
1 - Familiarity with M-16 rifle	4.3	1.0	3.3	1.7
2 - Familiarity with 9mm pistol	3.6	1.1	3.8	1.2
3 - Competence in defending self and patient if called to do so	3.9	1.1	3.7	1.4
4 - Competence and confidence in protecting self with mask/MOPP	3.8	1.0	3.6	1.3
5 - Competence in ability to navigate using a map and compass	4.2	.9	3.8	1.1
6 - Competence in ability to maintain weapon in working order	4.1	1.1	3.4	1.6
7 - Competence in ability to perform duties in adverse conditions	3.4	1.1	3.6	1.3
8 - Competence in ability to decontaminate self and patient using decontamination equipment	3.2	1.1	3.0	1.3
9 - Familiarity with status under Geneva Conventions	4.0	1.0	3.5	1.1
10 -Competence in ability to resist enemy if captured	3.6	1.0	3.2	1.2
11- Familiarity with standard Army communication equipment	3.3	1.1	2.5	1.4

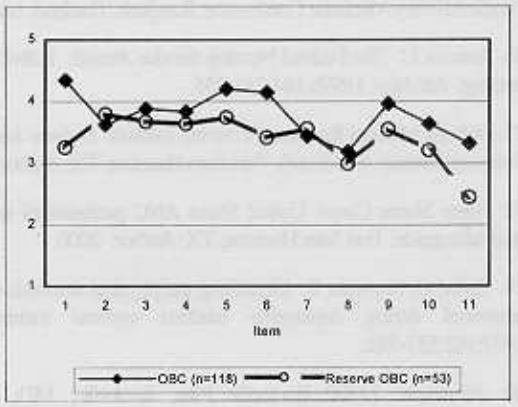


Figure 3. Panoramic display depicting READI profiles and a statistical comparison of active duty and U.S. Army Reserve nurses for self-reported soldier survival skills.

duty and U.S. Army Reserve units could plot before and after READI profiles through time to assess changes, training effectiveness, and to set goals. Third, comparing an individual nurse's READI rating scores to established unit or cohort profiles could be used to identify personal deployment needs, and could also suggest continuing education opportunities for individuals. Lastly, the READI could be used as a job preview mechanism for ANC recruiting activities. Further administrations are needed to chart benchmark nurse readiness profiles for different rank and experience levels to provide comparisons that impact readiness issues at the unit, corps, and medical command levels. Future applications of the READI to different cohort groups will help broaden and strengthen the reliability, validity, and usability of the instrument.

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The Roots of American Military Humanitarianism

LTC Charles W. Callahan, MC, USA†

One afternoon, during a recent peace enforcement mission on the Island of Aragon, a local health worker brought a Cortinian farmer to our medical company. The farmer had collapsed in his field with a seizure. He was placed on a stretcher in the shade of the camouflage net outside the Area Support Treatment Tent. Arguably, he should not have been allowed inside the Brigade Support Area, but at that point he was at our door in need of medical care.

Our guidance from the Combat Team Commander was to provide care to civilians only where life, limb, or eyesight was in jeopardy. While we awaited more specific guidance regarding this farmer, his condition deteriorated and emergency therapy was needed. He received medications for the seizures, one of which was provided by a co-located Air Force Critical Care Air Transport Team. Unfortunately, he then suffered a respiratory arrest, and was quickly moved into the treatment tent where we was intubated and "artificial" ventilation was begun. His condition stabilized as we received authorization for him to be transferred to a Level III facility, and he was flown on an Army MEDEVAC helicopter to the off-island facility.

The Cortinian health worker was very appreciative, because she knew that the level of care we provided the farmer was unavailable in their country, especially after their recent war with Acadia. In a brief hour of active resuscitation in rendering humanitarian aid, we established a new standard of medical care on this tiny island nation. This episode, (very convincingly enacted by the Joint Readiness Training Center role-players), points to a dilemma facing Army medical personnel deployed on peacekeeping/peace enforcement missions. There is often an absence of clear doctrine regarding the role of medical care for humanitarian assistance on these operations; and in the policy vacuum, decisions are driven by events. The practice of American military personnel caring for civilians in disaster and on the battlefield is not new. It is only recently, however, that assistance has become in some cases the primary mission.

In a 1999 interview for *U.S. Medicine*, Rear Adm Michael L. Cowan, MC, USN, Chief of Staff to the Assistant Secretary of Defense for Health Affairs, emphasized the long history of military involvement in humanitarian emergencies. He stated, "we have always been involved in humanitarian assistance..."[1] A brief review of recent history confirms this. In the past year, the Department of Defense has participated in four large relief missions, following Hurricane Mitch in Central America, the terrorist bombings in Nairobi and Dares Salaam, the conflict in Kosovo, and the earthquake in Turkey. This generation will also recall humanitarian efforts in Desert Storm/Desert Shield, Provide Comfort in Iraq (1990-1991), Sea Angel in Bangledesh (1991), Restore Hope in Somalia (1992-1993), Support Hope in Rwanda (1994), and Restore Democracy in Haiti (1994).

Humanitarianism was also demonstrated in the Nation's prior two "major" wars. For example, in Vietnam, the 3rd Marine Division operated a hundred-bed children's hospital staffed by Navy pediatricians, surgeons, and medical officers. It was co-located with a Forward Casualty Receiving Facility near the Demilitarized Zone. The hospital saw more than 250 outpatient visits a day from an underserved civilian population of more than 350,000. Military physicians worked alongside Vietnamese medical personnel caring for 100 children admitted each month. The hospital was founded as a

part of Delta Medical Company, 3rd Medical Battalion, 3rd Marine Division. This unit was the northernmost medical post in South Vietnam. Delta Medical Company came under fire during the January 1968 Tet Offensive and its facilities were severely damaged. The Marine Children's Hospital itself was opened in September 1968. Unfortunately, it was destroyed in 1972 by advancing North Vietnamese forces.[2]

Military humanitarianism was also demonstrated in the Korean War. The "Armed Forces Aid to Korea" program provided emergency medical aid to Korean civilians, as well as education programs for Korean doctors and nurses. Supplies, funds, and technology for the construction of hospitals were also included in the program. The U.S. soldiers donated cash to the program staffed by volunteer Army doctors and nurses. Eventually, more than 3.5 million dollars was collected and 320,000 medical procedures performed.[3]

The roots of military humanitarianism reach back more than 100 years to the military's first excursions onto "foreign" soil. At the end of the 19th century, military medical personnel accompanied the Army as it was stationed on America's Western frontier. They cared for the families posted with soldiers as well as the civilians and Indians who lived near the fort. "...wives accompanied their husbands, slept in tents, had babies, a good many in the wilderness, reared them in the fear of God and Indians but of nothing else."[4]

In 1880, a military physician wrote this account of his posting: "I was ordered to Fort Washakie, Wyoming...150 miles from the nearest railroad station, on the Shoshane and Arapahoe Indian reservation, on the Little Wind River. I was there 2 years without ever seeing another doctor of any kind and had to give medical care to that small garrison, to all the Indians on the reservation, about 4,000, there being no agency doctor on duty during my stay, and to all the cowboys, miners, and odds and ends of civilians found on the frontier...and this was a charity practice, for the people were very poor."[4]

The precedent for the medical care of the native inhabitants of America's frontier was established a century earlier with the expedition of CPTs Merriweather Lewis and William Clark. On a cool autumn morning in 1806, these two Army officers led their men on the final leg of an 8,000-mile, 28-month journey. Their return to the shores of St Louis marked the completion of the most complex and successful infantry patrol in the history of the U.S. Army. In the course of 2 years, they identified and described 178 new species of plants, 122 species of animals, and mapped the previously uncharted frontier of America's new territory.[5]

While modern historians have criticized the expedition because no medical personnel were included, Lewis, in particular, had extensive medical training. He studied with Dr Benjamin Rush, the most prominent physician of his day, and a signer of the Declaration of Independence. Doctor Eldon G. Chuinard wrote regarding the explorer's medical expertise: "Lewis and Clark possessed not only extraordinary common sense, but also the medical knowledge common to the most educated men of the time, particularly to those who had served as military officers and had seen medical officers at work."[6] Lewis came from a medical family. Lewis' brother Reuben and half-brother John Mark were both physicians. As a testimony to the commander's medical leadership, only one corps member died, probably from appendicitis.

The medical needs of the "Corps of Discovery" were well met by the expertise of the expedition's leaders. Lewis and his men were also prepared, specifically, to practice military humanitarianism during the expedition. Review of the records kept by the expedition reveals three medical goals for the Indians they encountered. Each one of these goals is an essential element of humanitarianism: to conduct health and demographic surveys, to practice disease prevention, and to provide direct "patient care."

Survey and assessment are key tools in humanitarian assistance missions. They are the essential first steps in deciding the appropriate response to a natural disaster or complex humanitarian emergency. Rush instructed Lewis to assess a number of health issues about the Indians he encountered on the journey. He requested they observe aspects of illness, development, nutrition, hygiene, and mental health: "what are the acute diseases of the Indians? is the bilious fever attended with a black vomit?...at what ages do the women begin and cease to menstruate?...what is the provision of their children after being weaned?..what

is their diet? ...at what time do they rise – their baths? ...what are their vices?...is suicide common among them?..."[6]

Clark composed an even more exhausting list of questions, probably compiling the suggestions of a number of sources. The purposes of such information gathering, then as now, was to determine the overall health of the people among whom they ventured, and to determine the likely threats to the health of soldiers who would inevitably follow them. Of interest, Lewis and Clark gained broad experience in the treatment of venereal diseases, acquired by the men from the Indian tribes with whom they wintered.

A second key element of humanitarian aid is the prevention of communicable diseases. Currently, prevention of measles, for example, is of great importance in missions to developing nations. While the disease is no threat to immunized American soldiers, it can have a devastating effect on susceptible, malnourished, stressed refugees or displaced persons. At the turn of the 19th century, smallpox was a similar threat.

In 1721, Drs Cotton Mather and Zabdiel Boylston of Boston introduced smallpox prevention by inoculation. They gave a small amount of modified smallpox virus to uninfected individuals. Many developed mild illness, but still developed immunity to the disease. The effectiveness of this therapy was demonstrated in a smallpox epidemic in 1721, where one tenth of the uninoculated died, while among the inoculated population, only one in 68 died.[6]

In 1796, working in England, Dr Edward Jenner first observed that infection with cowpox also conferred smallpox immunity. He published his discovery 2 years later, and the practice of vaccination (derived from "vaccinus," Latin for "of or from a cow") was rapidly adopted in America. In 1801, President Thomas Jefferson vaccinated 70-80 members of his own family. His enthusiasm for vaccination affected his guidance for the expedition of Lewis and Clark. They were instructed to provide vaccination against smallpox to the Indians, at the President's behest. "Carry with you some matter of the kine-pox, inform those of them with whom you may be of its efficacy as a preservative from smallpox, and instruct them and encourage them in the use of it. This may be especially done wherever you winter."[6]

In a letter to the President from Pittsburgh on 3 October 1803, Lewis wrote, "I would thank you forward me some of the vaccine matter, as I have reason to believe from several experiments made that it has lost its virtue." He probably tested the vaccine matter sent to him in small glass tubes by Jefferson, and when it failed to result in the characteristic open, crusted cowpox sore, he concluded that the agent was ineffective. There is no record that the vaccine was replaced, and the opportunity to prevent this major contagious disease, which would eventually devastate many Indian tribes, was missed.[6]

Finally, the explorers' diaries record many medical encounters with the Native Americans during their expedition, many with children. On 21 December 1804, Clark wrote "Woman brought a child with an abscess on the lower part of the back and offered as much corn as she could carry for some medicine." Captain Lewis administered. Three months later, Lewis recorded an episode where a chief "visited us with a sick child, to whom I gave some of Rushes pills." These pills were a combination of calomel, mercurous chloride and jalap, and served as a very powerful purgative combination. They also attended the labor of their teenage Indian guide, Sacagewea. When her labor failed to progress, they administered two rings of a rattlesnake rattle, according to a local Indian folk medicine tradition. Soon after the therapy, the baby was born. Lewis wrote, "Perhaps this remedy may be worthy of future experiments, but I must confess that I want faith as to its efficacy."[6]

They became very attached to this child, whom they referred to as "Pomp." When he was 15 months olds, he became ill. On 22 May 1806 Lewis wrote, "The child...is very ill this evening: he is cutting teeth, and for several days has had a violent lax, which having suddenly stopped, he was attacked with a high fever...and his neck and his throat are much swollen this evening." The child probably had an infected lymph gland and perhaps sepsis. Three days later the child was described as, "more unwell than yesterday..." Clark felt that he was deathly ill. Finally, the fever broke after treatment with cream of tartar and repeated application of poltice of onions. Half a week later Lewis wrote, "I believe the swelling will terminate in an ugly imposthume (abscess) just below the ear."[6]

Acute medical care to indigent civilians who may suffer unusual tropical diseases is a key element of effective humanitarian assistance. Effective medical care by military personnel communicates peaceful, well-meaning intent. United States military medical personnel may be better suited to provide this care in some cases than professionals participating in emergencies under the auspices of nongovernmental organizations (NGOs). Military physicians are rapidly deployable and come with their own security. Security is often the Achilles' heal of NGO operations. Military are experienced in "field-craft" and familiar with the practice of medicine in austere, harsh conditions. In addition, the supporting logistics available to American medical forces exceeds the capability of NGOs.

Finally, military physicians represent a range of specialists whose expertise is often necessary in complex humanitarian emergencies. The recent "mission" to Aragon, mentioned previously, serves as an excellent example. The physicians deployed included a general medical officer, family practitioner, physician's assistant, two pediatric sub-specialists, two general surgeons, an orthopedic surgeon, and three emergency medicine specialists, to say nothing of the additional ancillary health-support personnel. Pediatricians deserve special mention, because children are often the most severely affected in humanitarian emergencies and are often the first to become ill in these settings. There is a clear role for military physicians on humanitarian assistance missions. There is also abundant historical precedent. As long as the military has been pushing the limits of the American frontiers, trained military personnel have rendered humanitarian assistance to the civilians living there.

Today, uniformed physicians are prepared for humanitarianism in military residency programs. Extensive "military unique training" in areas such as tropical and preventive medicine is a part of every residency program. Civilian physician training programs contain no such preparation. Military pediatricians have developed the "Military Medical Humanitarian Assistance Course" at the Uniformed University of the Health Sciences in Bethesda, MD. This course is designed to train primary care physicians in the care of refugees and internally displaced populations who are increasingly being seen in "military operations other than war." Civilian continuing medical education that teaches the approach to humanitarian assistance is not generally available.

However, several additional courses geared toward the management of complex humanitarian emergencies are available through the "Center of Excellence in Disaster Management and Humanitarian Assistance." Until recently, this center was the only World Health Organization's collaborating center for humanitarian, civil military cooperation. It operates in partnership with the Center for Disease Control, the U.S. Pacific Command, and Tripler Army Medical Center. The center is run by a military pediatrician.

Medical humanitarianism has been a part of the American military tradition since the Nation's birth. The value of providing care in these settings includes the practical measure of force protection through the diminution of the risk of disease. Humanitarian care also reflects the National Military Strategy that dictates the use of American Forces to promote peace and stability worldwide in an effort to "shape the international environment."[7] Finally, making civilian health care needs a priority is a positive, visible and tangible reflection of our interest and intent for the people we are sent to liberate or defend.

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Obstetrical Ultrasound Training: Survey of Military Residents' Experience

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Our purpose was to ascertain the scope of obstetrical ultrasound education in military obstetrics and gynecology (OB/GYN) residencies and resident satisfaction with this training. Military OB/GYN residents completed an 11-question survey in May 1997. Discreet response rates and trends by postgraduate year (PGY) level were calculated. Fifty-eight percent of the surveys were returned for analysis. A majority of respondents were satisfied with their training, however, nearly half reported no formal training. Satisfaction with training and self-perception of ability increased with successive PGY. Residents offered numerous suggestions for improving their training despite minimal awareness of credentials guidelines. Obstetrical ultrasound training in military OB/GYN residencies appears to be satisfactory from the residents' perspective. However, there appear to be areas for improvement.

Introduction

Currently, the Residency Review Committee (RRC) for OB/GYN residencies does not have specific requirements for formal obstetrical ultrasound education. The RRC has developed theoretical ultrasound training program guidelines, however, no documentation of training is required of residents.[1] Formal credentials criteria for postgraduate obstetrical ultrasound practice are quickly evolving. At this time, there are no data concerning ultrasound training in military OB/GYN residencies. The goal of this pilot survey was to: (1) quantify the obstetrical ultrasound training being performed in military residencies; (2) assess residents' satisfaction with this training; and (3) identify areas for improving obstetrical ultrasound training.

Methods and Materials

An obstetrical ultrasound training survey consisting of 11 questions (Table 1) was sent to one staff obstetric provider at each military OB/GYN residency with instructions to distribute and collect the surveys from as many residents as possible on one occasion (department lecture). The survey was distributed in spring 1997 to survey the residents at the end of the academic year. Discreet response rates and trends by PGY level are reported. See Table 1 for survey questions.

Results

Resident surveys were returned from 10 of 11 military OB/GYN residency programs; one program elected not to participate in the survey. Out of 162 potential respondents, 94 (58%) surveys were completed and results were grouped according to PGY level (Table 2). Seventy four percent of the respondents were "satisfied" with their obstetric ultrasound experience (Table 2).

Although 44% of those who responded noted no formal obstetric ultrasound training at their institution, there was higher satisfaction with training at each successive PGY level (Table 3). Seven out of 10 PGY-1 physicians were satisfied with their training in obstetric ultrasound and this increased to 86% by the PGY-4 level.

1. PGY Level?
   [ ] PGY-1 [ ] PGY-2 [ ] PGY-3 [ ] PGY-4

2. For your postgraduate level, do you feel adequately trained in obstetrical ultrasound?
   [ ] Yes [ ] No

3. Who teaches the majority of obstetrical ultrasound to residents at your institution?
   [ ] Perinatologist [ ] Fellow [ ] Staff Obstetrician [ ] Senior Resident [ ] Junior Resident [ ] Self-taught

4. Is there a specific obstetrical ultrasound rotation in your residency program ?
   [ ] Yes [ ] No

5. Do you feel that a fetal survey (level II ultrasound) is an important ultrasound skill to learn in residency?
   [ ] Yes [ ] No

6. Who performs the majority of obstetrical ultrasound for the patients in your training facilities?
   [ ] Obstetric Residents [ ] Radiology [ ] Staff Obstetrician/Perinatologist

7. Which of the following do you feel adequately trained to perform?
   [ ] Basic Ultrasound (AFI, fetal number, cardiac activity) [ ] Anatomical Survey [ ] Doppler Studies [ ] None

8. Do you plan on performing formal obstetrical ultrasound after completion of residency?
   [ ] Yes [ ] No

9. Do you feel that your residency will give you adequate training in obstetrical ultrasound?
   [ ] Yes [ ] No

10. Are you familiar with the requirements for credentialing in obstetrical ultrasound?
    [ ] Yes [ ] No

11. How would you improve obstetrical ultrasound in your residency program?

Table 1. Obstetrical Ultrasound Survey

	Number of Respondents	Satisfied with Training
PGY-1	20	9
PGY-2	25	18
PGY-3	28	25
PGY-4	21	18
Total	94	70 (74%)

Table 2. Obstetric Ultrasound Satisfaction

	OB Ultrasound Rotation	Adequate Training in Obstetrical U.S.
PGY-1	8	14
PGY-2	11	21
PGY-3	17	23
PGY-4	13	18
Total	49 (56%)	76 (80%)

Table 3. Obstetric Ultrasound Training

All responding residents felt comfortable performing basic ultrasound (fetal number, fetal presentation, placental location, etc). With increasing PGY year level, the respondents perceived an increasing ability to perform a fetal survey. Only 10% of the PGY-1 physicians felt they could perform a fetal survey, while 81% of PGY-4 physicians felt capable of doing so. Few respondents felt well trained in the use of Doppler flow techniques (9%) (Table 4). When queried, the residents revealed that obstetric providers performed most of the obstetric ultrasounds in their institution (Table 5). The majority of ultrasound education was provided by maternal-fetal-medicine subspecialists (43%) and senior residents (32%) (see Table 6).

Ninety seven percent of the residents felt being trained to perform a fetal survey was important. The majority of residents (84%) planned to perform obstetric ultrasound after completion of their residency training (Table 7). The respondents had very little knowledge of credential requirements in obstetrical ultrasound, with only 14% of those surveyed stating they were familiar with these guidelines (Table 7).

The last question on the survey was an open-ended question: "How would you improve obstetric ultrasound training in your program?" Dedicated obstetric ultrasound rotation(s), one-on-one teaching of obstetric ultrasound by the perinatologist(s), supervision during ultrasound

	Basic Ultrasound	Anatomical Survey	Doppler Flow Studies	None
PGY-1	20	2	2	0
PGY-2	25	16	1	0
PGY-3	28	25	2	0
PGY-4	21	17	3	0
Total	94 (100%)	60 (64%)	8 (9%)	0 (%)

Table 4. Ultrasound Abilities

	Obstetric Residents	Radiology	Staff Obstetricians/ Perinatologist
PGY-1	9	3	8
PGY-2	7	4	14
PGY-3	11	5	12
PGY-4	8	5	8
Total	35 (37%)	17 (18%)	43 (45%)

Table 5. Who Performs Obstetric Ultrasound

	Perinatologist	Staff Obstetrician	Resident	Other
PGY-1	5	1	13	1
PGY-2	10	4	8	3
PGY-3	16	4	3	5
PGY-4	9	2	6	4
Total	40 (43%)	11 (12%)	30 (32%)	13 (13%)

Table 6. Supervision of Obstetric Ultrasound

	Fetal Survey Important to Perform	Perform Obstetric Ultrasound After Training	Familiar with Ultrasound Credentials
PGY-1	19	16	2
PGY-2	24	21	1
PGY-3	27	26	4
PGY-4	21	16	6
Total	91 (97%)	79 (84%)	13 (14%)

Table 7. Obstetrical Ultrasound

examinations by more experienced providers and didactic sessions reviewing films of congenital anomalies were all suggested.

Discussion

This survey was conducted to assess resident physicians' perspective on how well they are trained in obstetric ultrasound. Obstetric ultrasound can be a useful diagnostic modality when performed by a trained provider. However, as Dr Roy Filly noted in his editorial in Radiology, "As we look at the proliferation of ultrasound instruments into the hands of untrained physicians, we can only come to the unfortunate realization that diagnostic sonography truly is the next stethoscope: used by many, understood by few."[2] The RADIUS study highlights the poor detection rates by some hospitals and that standardized education and credentialing may improve detection rates.

The American College of Obstetrics and Gynecology (ACOG) has published specific guidelines for "basic ultrasound examination" and "survey of fetal anatomy."[3] However, specific credential guidelines for practicing obstetricians with respect to diagnostic ultrasound have not been published by ACOG. Similarly, resident training guidelines with respect to number of obstetrical ultrasound exams performed, hours of supervised ultrasound, or number of didactic hours spent in review of cases and films, do not exist. Training in diagnostic obstetrical ultrasound in many residency programs may consist of an array of providers, ranging from senior residents to maternal-fetal subspecialists. According to our survey, nearly half of the residency training programs did not have a designated rotation for residents to learn obstetrical ultrasound. Ultrasound, unlike many procedures performed by OB/GYN residents, is not documented and reviewed by the residency review committee. Metheny et al published the mean values of procedures performed by residents in varying residencies and compared large residency programs to smaller residency programs.[4]

This manuscript did not list the number of ultrasound examinations performed by the residents. The International Society of Ultrasound in Obstetrics and Gynecology (ISUOG) released in 1993 and 1996 recommendations for education for OB/GYN residents with respect to sonography.[5,6] However, if these recommendations are not implemented by programs and documentation done, quality assessment in education will remain difficult.

The American College of Radiology (ACR) has specific credential guidelines for diagnostic obstetrical ultrasound.[7] These guidelines essentially state that passing ACR board examinations pertaining to obstetrical ultrasound as well as adequate postgraduate clinical experience (3 months time and 500 examinations) are necessary components. Provisions for credentials are also made for physicians completing postgraduate training prior to institution of formal ultrasound training guidelines. Regardless of method of training, supervision by appropriate providers is required. Following qualification, continuing medical education and experience are prescribed.

The American Institute of Ultrasound in Medicine (AIUM) has also set training and credential guidelines for physician interpretation of diagnostic ultrasound.[8] These guidelines are similar to those of the ACR, however, they allow an additional route to credentials through continuing medical education efforts in lieu of clinical experience.

Three out of four residents surveyed were satisfied with their obstetrical ultrasound training. However, only 14% of residents stated they understood ultrasound credential guidelines. This implies that many residents believe their training is adequate without a basis for comparison. An editorial by Albert Fortuny discusses the lack of uniformity in standards for training and credentialing providers to perform obstetrical ultrasound.[9] Doctors Bronshtein and Zimmer state that fetal sonography should be a field in its own right, and studied in a formal manner.[10]

The last question on the survey asked residents how to improve obstetrical ultrasound training in their residency. Increased time for obstetrical ultrasound didactic sessions and review of hard copy films for evaluation of fetal anomalies provided good suggestions for improvement in resident experience. The survey data suggest there is no standard curriculum being taught, no uniformity for who is teaching, and that there is a need for improvement in obstetrical ultrasound training, especially for the programs without a designated ultrasound rotation.

Although no hard conclusions can be made with a 58% survey response rate, this is the only data on obstetrical ultrasound training during OB/GYN residency.

In addition to formalizing the education process, documentation of resident exams with quality assurance review would provide feedback for improvement of training. A dedicated obstetrical ultrasound rotation would allow time to learn principles and document adequate exam numbers for credentials (similar to resident experience data currently required by the RRC). However, such a rotation would either add time to residency training or take time away from other clinical experience, and in some institutions may not be easily achieved without compromise and cooperation with our radiological colleagues.

Establishing curriculum standards for obstetrical ultrasound education, didactic instruction and ultrasound supervision by appropriate providers, documentation and quality assurance of such training, and appropriate Council on Resident Education in Obstetrics and Gynecology and American Board of Obstetrics and Gynecology examination pertaining to obstetric ultrasound are the basic needs for improving ultrasound education and formalizing credentials for providers within our specialty. Provisions for continuing experience and medical education for current providers of ultrasound examinations, similar to those of the ACR and AIUM, need to be developed and implemented within ACOG, or else others will mandate or restrict our practice.

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AMEDD Dateline

Wayne R. Austerman, PhD†

2 Jul — Doctor Theodore Tate, surgeon of the 3rd Pennsylvania Cavalry, guided a division of Union troops along a shortcut from Hanover to Gettysburg as the Union Army of the Potomac was locked in battle with the Confederates in Pennsylvania. A native of Gettysburg, Dr Tate narrowly escaped capture during a skirmish with enemy cavalry later that day. **(1863)**

5 Jul — Major General Arthur St Clair was forced to abandon Mount Independence and Fort Ticonderoga on Lake Champlain, NY, in the face of a British attack. He left behind an artillery detachment at Mount Independence with orders to destroy the pontoon bridge linking that post and Fort Ticonderoga when the enemy attempted to cross it. The gunners, instead, found a keg of wine and were dead drunk when the British stormed across the bridge and captured the strategic piece of high ground. **(1777)**

10 Jul — The stage was set for a domestic mass casualty situation when a bolt of lightning struck a powder magazine at Picatinny Arsenal/Denmark Naval Ammunition Depot, Dover, NJ, detonating over one million tons of TNT in the equivalent of a nuclear blast, which hurled wreckage for 3½ miles. Only the fact that the accident occurred on a Saturday prevented massive loss of life and injuries to the staff. **(1926)**

11 Jul — Birthday of COL John Paul Stapp. An AMEDD surgeon during World War II, Dr Stapp pioneered in high-altitude, high-speed aviation medicine research, often volunteering as a test subject in hazardous experiments. In December 1947, COL Stapp became the first human to ride an experimental rocket sled. During a subsequent test, he rode the sled to a speed of 632 miles per hour, at which point it decelerated to a full stop within 1.4 seconds, subjecting his body to a force 45 times the normal weight of gravity, the highest ever survived by a human being. During the course of his rocket sled research, the intrepid physician experienced retinal hemorrhages, cracked ribs, and broken wrists. **(1910)**

12 Jul — William S. Murphy, U.S. minister to the Republic of Texas, died of yellow fever in Galveston. The diplomatic posting was widely regarded as a death sentence in the State Department because all of Murphy's predecessors had died of disease in the fever-ridden embassy during the past 4 years. **(1844)**

13 Jul — The staff of William Beaumont Army Hospital, El Paso, went on alert for the reception of civilian casualties after a flight of B-24 bombers departed neighboring Biggs Army Air Field on a practice bombing mission. A navigation error caused them to mistake the Hudspeth County town of Sierra Blanca for the desert bombing range 110 miles east of El Paso, and 10 bombs were dropped on the community. Five of them struck the railroad line which ran through town and a sixth landed in the driveway of a service station. Despite initial fear and confusion among the citizens, no one was injured and the AMEDD facility returned to routine operations. **(1944)**

16 Jul — The post commander at isolated and Indian plagued Fort C.F. Smith, MT, reported that the garrison surgeon, Dr J. McCleery, "had become a raving maniac and had to be restrained." **(1867)**

19 Jul — Four residents of Carizozo, NM, were air-evacuated to William Beaumont Army Hospital for treatment of burns and lacerations after an F-80 jet fighter crashed into a gas station while attempting to take off from a state highway. The jet had made a forced landing on the highway on the preceding day due to bad weather and a fuel shortage. The pilot, Captain Floyd G. Soule, died upon impact when the aircraft lost altitude and struck the service station. **(1947)**

21 Jul — Mrs Judith C. Henry, widow of a U.S. Navy surgeon, was the first woman to become a casualty during the Civil War. A bedridden invalid, she was caught in the crossfire of the Battle of First Bull Run, as Union and Confederate armies clashed near Mannassas, VA. A Union artillery shell severed one of her legs, leaving her to die a painful death several hours later. **(1861)**

25 Jul — Daredevil Robert Leach went over Niagra Falls in an 8-foot long steel barrel. He survived the 180-foot drop with a broken jaw and two broken kneecaps. On 25 April 1929, Leach slipped on an orange peel and fell, fracturing his leg. The broken limb was amputated, infection followed, and Leach died of gangrene soon afterward. **(1911)**

29 Jul — A yellow fever epidemic erupted in Jacksonville, FL, and persisted until 7 December, infecting over 4,500 people and killing over 400. **(1888)**

An electric respirator, the first "Iron Lung," was installed at Bellvue Hospital, New York City. Devised by Drs Philip Drinker and Louis A. Shaw of Harvard University, the new device was useful in overcoming many kinds of respiratory failure. **(1927)**

31 Jul — Austrian paratrooper Bernhard Trammer survived a 7,000-foot fall when both his main and reserve parachutes deployed and became entangled with each other. His first words when he awakened in a hospital were, "When can I jump again?" **(1999)**

1 Aug — Former medic Phillip Conner of the Austin Police Department distinguished himself during the notorious University of Texas "Tower Sniper" incident by entering the observation deck of the tower to administer first aid to several of gunman Charles Whitman's initial victims before joining in the assault which ended his reign of terror. Whitman left 14 dead and 31 wounded within 45 minutes of his opening fire from the structure. **(1966)**

The earliest recorded yellow fever epidemic in North America struck Charleston, SC, killing 150 residents within 6 days. **(1699)**

Four thousand two hundred disease cases burdened American forces in Cuba at the close of hostilities in the Spanish-American War. Fewer than 400 American soldiers were killed in action or died of wounds, while fully 90% of all U.S. casualties were caused by disease. **(1898)**

2 Aug — Surgeon Samuel P. Horton of Fort Phil Kearny, WY, arrived on the scene of the celebrated "Wagonbox Fight," where 53 men of Company C, 27th Infantry, had stood off an attack by more than a thousand Sioux and Cheyenne warriors, inflicting heavy casualties upon them at the cost of seven soldiers killed and two wounded. Surgeon Horton carried a keg of whiskey and issued each man a cup full of medicinal liquor as a stress-reliever. **(1867)**

6 Aug MG Phillip Schuyler hired Dr Samuel Stringer of Albany, NY, as the U.S. Army's first recorded contract surgeon. **(1775)**

8 Aug A surgical team led by Dr Michael DeBakey installed the first successful artificial heart pump, a left ventricle bypass, in a patient at Methodist Hospital in Houston, TX. It was removed 10 days later. **(1966)**

12 Aug Doctor Joseph Lister successfully administered carbolic acid solution as a surgical disinfectant while treating a fractured tibia. **(1865)**

15 Aug The Panama Canal opened for operations, linking the Atlantic and Pacific Oceans via a series of locks and massive land cuts. When construction began in 1904, the death from disease for workers was 14.1 per thousand. By the time of its completion, the efforts of Dr William Gorgas in disease prevention had reduced the death rate to six per thousand. **(1914)**

A yellow fever epidemic erupted in Memphis, TN. Twenty five thousand citizens fled the city in panic. Of the 20,000 who remained, 17,000 contracted the disease, and 5,000 died of it by October. **(1878)**

16 Aug Poor quality rations caused an epidemic of diarrhea among American troops, contributing to their defeat at the hands of Lord Cornwallis at Camden, SC. **(1780)**

17 Aug New York City Emergency Medical Services personnel responded when grandmother Alice Roth was struck and knocked unconscious by a foul ball hit by Philadelphia Phillies batter Richie Ashburn. As Mrs Roth was being carried from the stands on a litter, she was struck by still another foul ball hit by Ashburn. Her total injuries were a broken nose, black eye, and bruised thigh. Her two grandsons were excited over getting to ride in the ambulance with her. The Phillies vs New York Giants game continued without interruption. **(1957)**

18 Aug British Colonel Banastre Tarleton's cavalry surprised Brigadier General Thomas Sumter's American guerrillas in camp at the Catawba River Crossing, SC. The Americans had captured over 200 gallons of rum that morning and many of them were drunk, including the officer of the day, who was responsible for the camp's security. Tarleton's troops killed or wounded 150 Americans and captured nearly 350. Tarleton was the inspiration for the brutal British cavalry officer depicted in the recent motion picture, *The Patriot.* **(1780)**

26 Aug The Battle of Long Island commenced at 2200 hours this night when British troops, foraging in a watermelon patch, became engaged in a firefight with elements of COL (Dr) Edward Hand's Pennsylvania Regiment. Malnourished and threatened by scurvy after a long sea voyage, during which they had subsisted on brackish water, weevil-ridden hardtack, and wormy salt pork, the British soldiers put up a spirited fight to retain control of the watermelon patch, which was located at the site of the present-day intersection of 39th Street and Fifth Avenue in Brooklyn. Three days later, Dr Hand's troops acted as rearguard as the defeated American Army evacuated Long Island by sea and fled to Manhattan in General Washington's narrowest escape of the war. **(1776)**

- Surgeon General Lawson approved a standard pattern of iron bed frame to be procured from contractors at a cost of $15 per unit for general issue to medical facilities. **(1837)**

5 Sep — General U.S. Grant was hospitalized in New Orleans, LA, after his horse fell on him. Grant was returning from a review of troops when an approaching locomotive's steam whistle startled his mount, which bolted, collided with a passing carriage, and then lost its balance while rearing and fell upon Grant. The frightened animal narrowly missed falling directly into the train's path when it collapsed. **(1863)**

7 Sep — Doctor Isaac M. Cline, physician and U.S. Signal Corps-trained meteorologist, headed the U.S. Weather Bureau's station at Galveston, TX. He assured the city's residents that a tropical storm reported to be traversing the Gulf of Mexico posed no threat to them. The next day a hurricane sent a tidal wave ashore, propelled by 200 mile per hour winds, destroying Galveston and flooding the coastline for 6 miles inland. An estimated 6,000 to 10,000 people died in the greatest natural disaster ever to strike the U.S. **(1900)**

8 Sep — Outbreaks of bubonic plague were reported in the seaport cities of London, England, and Glasgow, Scotland, prompting memories of the devastating 17th century visitation of the plague across Europe. Improved public sanitation measures prevented a similar outbreak in the 20th century. **(1900)**

13 Sep — New York City realtor Henry H. Bliss became the first casualty of vehicular trauma in American medical history when he was struck by a physician's chauffeur-driven automobile as he stepped down from a streetcar at 74th Street and Central Park West. The physician assisted at the scene of the accident, but Bliss later died of his injuries at a local hospital. No legal action resulted from the incident. **(1899)**

15 Sep — Alexander Fleming discovered penicillin. **(1928)**

17 Sep — The U.S. Army suffered its first aviation casualty when Orville Wright's aircraft crashed during a demonstration flight at Fort Meyer, MD, killing its passenger, LT Thomas E. Selfridge. Captain H.H. Bailey, MC, conducted the autopsy on Selfridge's body, which revealed that he suffered a compound, comminuted skull fracture in the crash. **(1908)**

30 Sep — Assistant Surgeon Benjamin King reported from the post at St Marks, FL, that "my hospital is very bad, and more or less wet at every rain; on the 16th of September, the tide rose uncommonly high, which nearly inundated this place and the adjacent country; the water was a foot deep in the hospital; in fact I visited my sick and went through it in a canoe. The bunks were sufficiently high to keep the sick out of the water." **(1821)**

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3. Articles should be submitted in disk form (preferably Microsoft Word on 3.5" disk) accompanied by two copies of the manuscript. Journal format requires four double-spaced typewritten pages to complete one page of two-column text. Ideally, manuscripts should be no longer than ***20 to 24 double-spaced pages****. Exceptions will be considered on a case-by-case basis.*

4. The American Medical Association Manual of Style should be followed in preparation of text and references. Abbreviations should be limited as much as possible. A list identifying abbreviations and acronyms ***must*** *be included with the manuscript or materials will be returned to the author.*

5. Photos submitted with manuscripts can be black and white or color. Color is recommended for best print reproduction quality. Space limitations allow no more than eight photos per manuscript. Photo prints are preferred, but we will accept electronic graphic (i.e., BMP, JPG, or GIF) and photo files in Microsoft Word or PowerPoint. Avoid excessive use of color and shading. Please do not send photos embedded in PowerPoint. Slides, negatives, or X-ray copies will not be published. To avoid possible confusion, the top of photos should be marked on the reverse and their position within the article should be clearly indicated in the manuscript. Photo captions should be taped to the back of photos or submitted on a separate sheet.

6. A complete list of references used in the text ***must*** *be provided with the manuscript. This list should include no more than 25 individual references, if possible. Each should provide the author's last name and initials, title of the article, name of the periodical, volume and page number, year of publication, and address of the publisher.*

7. Drugs should be listed by their generic designations. Trade names, enclosed in brackets, can follow.

8. The author's name(s), title, current unit of assignment, PCS date (if applicable), and duty phone number ***must*** *be included on the title page.*

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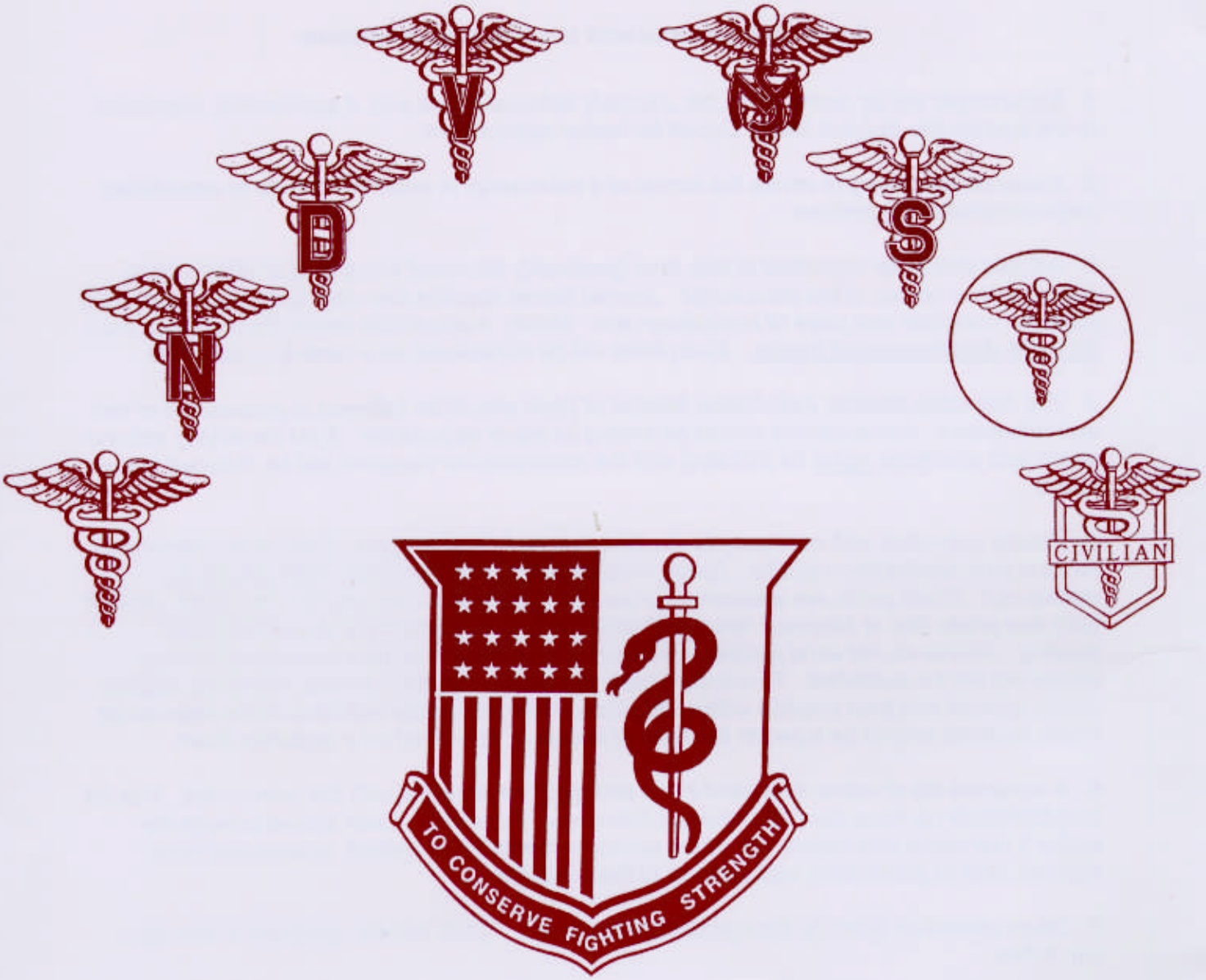

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